POLICY RESEARCH WORKING PAPER 1604

Costs of Infrastructure Deficiencies in Manufacturing in Indonesia, Nigeria, and Thailand

The private costs of infrastructure deficiences are substantial — and the burdens are much greater on small firms than on large firms in Indonesia, Nigeria, and Thailand.

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Summary findings

This paper, the first in a series of project reports, briefly describes the background of this research project, which was conducted as a sequel to an earlier study on Nigeria.

Using the fresh results from a sample survey of manufacturing establishments in Indonesia (290 establishments) and Thailand (300), the authors contrast and compare the findings from these new data with data from an earlier study of Nigeria. They compare especially:

- The extent and incidence of public infrastructure deficiencies.
- The extent of manufacturers' private provision of infrastructure in response to such deficiencies.
- The capital shares of various private infrastructure investments, including electric power, water, telecommunications, transport, and waste disposal.
- The firms' costs for producing their own electricity and water.

The extent of public infrastructure deficiencies and private provision of infrastructure services varies across countries and by firm size. For example, 92 percent of Nigerian firms had their own generators to supplement the inadequate public supply; only 66 percent of firms did in Indonesia, and only 6 percent in Thailand. But the quality of electric power in Thailand was not much different from that in Indonesia.

The total share of capital investment in private infrastructure was 16 percent of all capital in Indonesian firms, about the same as in Nigerian firms (14 percent), which was twice that in Thai firms.

The private costs of infrastructure deficiences are substantial and the burdens are much greater on small firms than on large firms.

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Prepared as part of the World Bank research project on infrastructure and productivity (RPO 676-71).

PREFACE

This report is part of a series of project reports (see the list below) produced within the research project, "Infrastructure Bottlenecks, Private Provisions, and Industrial Productivity: A Study of Indonesian and Thai Cities," which was jointly funded by the World Bank Research Committee (RPO 676-71) and USAID, Jakarta. Under the overall direction of Kyu Sik Lee, the study was jointly conducted with a research team headed by Chalongphob Sussangkarn at Thailand Development Research Institute, Bangkok, and a team headed by B.S. Kusbiantoro at Institute of Technology Bandung.

The following persons made contributions during the data collection phase of the project: Helen Garcia and Nachrowi of the World Bank; Suwandhi Sastrotaruno, and Sukmadi Bolo of the Indonesian Central Bureau of Statistics; Robert Rerimassie, Wawan and Dien Sanjoto of Hasfarm Consultants in Jakarta; Yongyuth Chalamwong, Suriya Wattanalee, Thaneit Khantigaroon, Dusit Jesdapipat of TDRI. The data work on Indonesia and Thailand was conducted by Gi-Taik Oh of the World Bank and the earlier work on Nigeria by Haeduck Lee of the World Bank.

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COSTS OF INFRASTRUCTURE DEFICIENCIES IN MANUFACTURING: INDONESIA, THAILAND, AND NIGERIA

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COSTS OF INFRASTRUCTURE DEFICIENCIES IN MANUFACTURING: INDONESIA, THAILAND, AND NIGERIA

I. BACKGROUND OF THE RESEARCH PROJECT

In 1992, the World Bank completed a research project, "Impacts of Infrastructure Deficiencies on Nigerian manufacturing." This research project produced a systematic empirical study which investigated the relationship between deficient public infrastructure services (as inputs in the production process of manufacturing firms) and the productivity of industry. This issue is important for policy and Bank lending operations because infrastructure affects economic growth and development in all facets of the development process.

In the 1980's, the operational staff of the Bank's Africa Region and policy makers in member countries became seriously concerned with the misallocation of resources manifested in duplications of capital investments in infrastructure by public enterprises on the one hand and private individual end-users on the other. In these countries, infrastructure provisions suffered from two extreme cases of inefficiency: (1) The non-performing public sector, which had a high level of capital investment in place but was unable to provide steady and reliable flows of infrastructural services; (2) the users, both firms and households, who found it necessary to provide their own facilities in whole or in part to substitute or complement the deficient public supply by incurring high private costs.

The study on Nigeria documented empirically (i) the extent of public service deficiencies in electric power, water supply, transport, telecommunications, and waste disposal; (ii) responses

of private manufacturing firms to these deficiencies; and (iii) related costs of various private provisions to substitute or complement inadequate public sector supplies. The empirical findings generated policy implications in: (a) deregulation to create contestable markets for the supply of various infrastructure services; (b) potential efficiency gains from economies of scale and scope through private sector participation in such emerging markets; and (c) socially efficient pricing policies which take into account the presence of "endogenous" congestion, subsequent system failures, and private provisions by firm size and location. Among a number of publications from the Nigeria study, the key findings can be found in the following: Lee and Anas (1992a); Lee and Anas (1992b); Baumol and Lee (1991); Lee and Anas (1989).

During the past several years or so, there have been shifts in the conceptual framework and policy thinking in the infrastructure sector within and outside the Bank, e.g., 1994 World Development Report on infrastructure. The study on Nigeria contributed to such shifts which include:

(a) Infrastructure services are not only final consumptions to meet the "basic needs" of households but also should be recognized as important "intermediate inputs" for productive activities of manufacturing and commercial enterprises.

(b) The criteria for evaluating the productivity of infrastructure should not only include the efficiency of infrastructure facilities on the supply side, but also the productivity of end-users, i.e., firms, and households on the demand side.

(c) Creating incentives for greater private sector participation in the infrastructure sectors would require a broader definition of institution and a different set of "rules of the game" to nurture the emerging markets for various types of service activities resulting from "unbundling" of complex and often inefficient systems.

The findings from the Nigeria study have drawn a wide attention both within and outside the Bank including the research and the development communities. It has been suggested that a similar study be conducted in some other countries to strengthen the empirical foundations to increase the transferability of the policy conclusions. Subsequently, the Nigeria study was extended to Indonesia and Thailand which have been experiencing serious infrastructure constraints not so much because of the public sector inefficiencies but for catching up with rapidly growing economies. The Bank's Research Committee and USAID/Jakarta jointly funded this study.

The purpose of this report is to contrast and compare the key findings from the establishment surveys conducted in Indonesia and Thailand with those from the Nigeria study (reported in the Urban Studies article and the Discussion Paper INU 50 mentioned above). In Section II, we document the extent of infrastructure deficiencies and private provisions undertaken by individual manufacturing firms. In Section III, we analyze the extent of costs incurred to the firms. The cost estimates of own production of electricity and water show economies of scale in own production and indicate the firm's willingness to pay for reliable services. Using the same establishment survey data collected, Report No. 2 presents a formal econometric analysis including the calculation of shadow prices to show the extent of

inefficiencies arising from existing distortions in the "markets" for infrastructure services such as electric power. Report No. 3 presents the results of policy simulations which calculate efficiency gains from alternative tariff policies incorporating (i) endogenous congestion under capacity constraints in the public sector, and (ii) costly private provisions sustained by private manufacturing firms. Report No. 3 suggest a broad policy direction for more private sector participation to expand the supply capacity and create contestable markets for infrastructure services.

II. THE EXTENT OF INFRASTRUCTURE DEFICIENCIES AND PRIVATE PROVISIONS

A. The Data

In the Nigeria study, a stratified random sample of manufacturing establishments was drawn from the Industrial Census as the sample frame which was provided by the Nigerian Federal Office of Statistics. The sample covered five states: Lagos, Anambra, Imo, Kaduna, and Kano. The survey questionnaire designed by the research team consisted of 36 pages and 349 computer readable variables. The field survey, conducted by the staff of Arthur Andersen & Co. in late 1988, was completed for 179 establishments. The sample firms covered all manufacturing industries and a continuum of firm sizes. Infrastructure deficiencies and firms' private provision responses were covered for five subsectors: electricity, water supply, transportation of freight and personnel, telecommunications, and waste disposal.

For the study of Indonesia and Thailand, a similar questionnaire was developed. The 31 page long survey covered the same five subsectors with 436 computer readable variables. In Indonesia, the Central Bureau of Statistics and the Hasfarm Consultants in Jakarta completed the survey for 290 establishments in Jakarta (142), three surrounding provinces (106), and Semarang (42). In Thailand, the Thailand Development Research Institute completed the survey for 300 establishments in Bangkok (146), five metropolitan provinces (104), and Chiang Mai (50). The 1991 Industrial Survey listing of the Central Bureau of Statistics was used as the sample frame

in the case of Indonesia, while the 1991 factory registration file at the Ministry of Industry was used for Thailand. In both countries, the field survey took place in the latter half of 1992. The sample composition by location, employment size and the type of industry (two-digit SIC) are shown for all three countries in Appendix Tables A1 through A9.

B. Incidence of the Deficiencies by Firm Size and Region

For the purpose of comparisons, the Nigeria results are reported here with those of Indonesia and Thailand. The data from the three countries reveal that there are large variations in the availability and quality of public infrastructure services and in the firms' private provision responses across firm sizes and regions within each country as well as among the three countries. Such observations imply a need for a fresh look at the government strategy for improving delivery of services in infrastructure subsectors.

Table 2.1 shows that although only 7.8 percent of the sample firms in Nigeria did not have generators for the production of their own electricity, the proportion was 34.5 percent in Indonesia and 94 percent in Thailand. This implies that the lack of reliable power supply is much more serious in Nigeria than in Indonesia and more so in Indonesia than in Thailand. Although the availability of public electric power is greater in Thailand than in Nigeria and Indonesia, it does not mean that the quality is trouble free. Table 2.5 indicates that 42 percent of the sample firms in Thailand reported production hours lost which amounted to 5.8 percent of the total production hours lost during the year, comparable to 6.9 percent in Indonesia. Many Thai firms indicated experiencing power interruptions in the form of "blinking" which often seriously disrupt power sensitive production operations.

Table 2.2 shows that a slightly larger proportion, 55.9 percent of Nigerian firms, did not have boreholes (interchangeably used with "artesian wells") for their own water supply compared to 40 percent in Indonesia. The extent of private provision for water supply was also low in Thailand.

From Table 2.2, it is clear that in all three countries, smaller firms rely more on the public supply and tend to be "captive" while larger firms can afford to have their own generators or boreholes. Moreover, in the case of electric power, the smaller firms are subject to the bulk of the power failure incidents (Appendix Tables B3, C3, and D3). Some small firms do not have their own generating equipment or water supply facilities, not because the burden of poor electricity or water supplies is less per unit of output for them, but rather because the production cost per unit of electricity or water is higher for them because of economies of scale in electricity generation and water production. This evidence is presented in Section III.

But while most of small Nigerian firms are captive without own generators, more of small firms in Indonesia rely on own generators. This may be partly due to the drastically different policy environment as well as small firms' affordability in these two countries. While the Nigerian government kept the policy of strictly protecting the inefficient state monopoly of the public power company (Nigerian Electric Power Authority), the Indonesian government took the opposite policy direction by encouraging the use of private sources of electric power to the extent that in 1991 it lowered the import duties on generators. Of those firms having own generators, on the average, 68 percent of the total electricity consumption by Indonesian manufacturers came from own power generators in 1991 while the proportion was only 37 percent in Nigeria (Table 3.2).

In the case of Boreholes too, Table 2.2 shows that large size firms can afford to have private water supply facilities in all three countries, but more of small Nigerian firms seem to suffer more from the lack of alternative sources of water supply than those in Indonesia. The extent of private supply of water was much lower in Thailand which implies a better public water supply system in Thailand than in Indonesia and Nigeria.

Tables 2.4 show that small firms are those that cannot afford capital investment for radio equipment and for motorcycles for couriers. This is also true for investment in vehicles for shipment of goods and for workers' commuting in Indonesia although the picture is not so clear in the other two countries (Table 2.3).

The heavy incidence of infrastructural failures among small firms has an implication for the growth of industries and the generation of employment. According to the "incubator hypothesis" that was tested in the earlier Bank research on industrial location in Bogota (Lee, 1989) and in Seoul (Lee, 1985), it was observed that small new firms spend their early years near the city center or in an old industrial area with easy access to good utilities and other essential services. They do so because it is prohibitively expensive for small firms to operate in outlying areas where infrastructure services are poor. As they grow and become more independent, they tend to move out of the central area for more space. The findings from our survey imply that large cities with poor infrastructure cannot offer the incubator function for small new firms. Since small firms cannot afford their own generators and boreholes and other facilities, the burdens of inadequate public infrastructure services are especially severe for the small firms which start and grow in those cities. This has a serious negative implication for the birth and growth of small firms and for the generation of employment and income, hence, on

poverty alleviation. The studies mentioned above (Lee 1985, 1989) showed that small new firms generate between 60 to 80 percent of the new jobs created in large cities in Asia and Latin America. This implies high returns to selectively improving infrastructure service provisions for particular users at particular locations, since the observed service reliability problems tend to be location and user specific.

A new research component in this research project was to include in the sample those firms located in secondary cities, Semarang in Indonesia and Chiang Mai in Thailand, to compare the quality of the infrastructure environment between the primate city and secondary cities especially in terms of the incubator function available for small firms. In the case of electric power for example, 19 percent of sampled firms in Semarang used generators as the main source of electric power while the figure was less than 10 percent in Jakarta (Appendix Table C1). The incidence of infrastructure deficiencies tends to be greater in secondary cities than in the primate city. The burdens on the small firms in smaller cities must be even higher than small firms in large cities.

III. COSTS OF PRIVATE PROVISIONS

A. Manufacturers' Responses to Infrastructure Deficiencies

There are essentially four ways in which firms might respond to infrastructural deficiencies. These are: (i) relocation; (ii) factor substitution; (iii) private provision; and (iv) output reduction. Below we discuss the economic rationale behind each of these responses.

Relocation

The firm may relocate to a site with better infrastructure services. Such relocation can occur within a city or from one region to another. Our survey results in all three countries show that firms seldom move to other locations from the initial site. In the case of Nigeria, even though 50 percent of the firms had been at their present location since 1980, only two out of the 179 sample firms indicated that they had relocated from another location. This absence of mobility is striking considering that the average annual moving rate observed in large cities in other developing countries such as Seoul and Bogota is about 5 percent (Lee, 1985 and 1989). The relative immobility of Nigerian firms is consistent with the fact that the capacity, regularity, and quality of infrastructure vary from bad to worse within and across Nigerian cities. This tends to limit the gains in infrastructure quality that can be achieved by moving to new locations. The high setup cost with a large amount of initial capital investment for own service provisions

would make it difficult for the firms to move. Similarly, the data revealed a low relocation rate in Indonesia and Thailand.

Another problem with relocation is that it often involves trading one infrastructural deficiency for another. For example, a firm that moves into an area because it is much cheaper to sink boreholes there (since the water table is high), might better its water supply, but the firm may face new problems such as losses in production time due to the commuting delays of employees.

Factor Substitution

The firm may substitute away from the use of the poorly provided service by adjusting its mode of production in favor of those inputs and raw materials which are less infrastructure intensive. For example, if a firm has a choice between a labor intensive and a capital intensive process and if the labor intensive process relies less on infrastructure than the capital intensive one, the firm's strategy would be to substitute labor for capital thus reducing the quantity of infrastructure inputs. The various private provision activities with large capital expenditures undertaken by the Nigerian and Indonesian firms indicate that their ability to adjust to the relative prices of labor, machines, materials, or various infrastructure service inputs is rather constrained by the current technologies in use. Since such input substitution possibilities are limited, the firms operate inefficiently by providing their own infrastructure services when these are crucial for their operations. In case of a milk processing plant, for example, even if the public power supply were available at proper voltage for as much as 90 percent of the time, the

firm could not afford to eliminate its own generators with 100 percent capacity because any voltage surges and drops at a critical time would threaten key equipment in the production process and result in much waste.

Private Provision

As already mentioned, numerous strategies are available for the firms to provide their own infrastructure services. The fact that the vast majority of firms do so even when the publicly provided infrastructure services are extremely inexpensive, indicates the importance of having reliable infrastructural inputs. Private provision as a strategy is not entirely separate from factor substitution. In fact, by providing their own infrastructural services, firms are substituting internal capital in the form of equipment, machinery, as well as labor in the form of maintenance personnel, for the publicly provided infrastructure services which are not forthcoming. As documented in Aeons and Lee (1988), firms are observed to pursue four different private response strategies. These are:

(a) Self-sufficiency: The firm provides its own infrastructural services to the point where it does not need any public inputs.

(b) Standby private provision: The firm has its own infrastructural facilities in place and switches to these facilities when the quality or reliability of the public services falls below a critical level.

(c) Public source as standby: The firm relies primarily on its own facilities but switches to the public supply during those times of the day when the public source delivers a high quality service.

(d) Captivity: The firm continues to rely on the public source exclusively despite the very low reliability of such a service.

Aeons and Lee (1988) argued that there are economic incentives for three additional regimes of private provision which are not observed in Nigeria because of government regulations on the supply and trading of infrastructure services by private entities. These regimes are: (i) joint production; (ii) satellite behavior; and (iii) shared production. These types of arrangements can be observed in Indonesia and Thailand however. "Joint production" refers to the case where a firm, typically a large one, which has already made a substantial investment in infrastructural capital finds it profitable to sell part of its infrastructural output to other firms. With few exceptions, this has not been possible in electricity production in Nigeria, because private producers of electricity are not normally allowed to sell surplus power to other firms or even back to NEPA. Nevertheless, the Thai government is now encouraging such arrangements to be followed. "Satellite behavior" is the other side of the coin with respect to joint production. A satellite firm is one which purchases infrastructure services from another firm that has surplus infrastructure services to sell. At times of power interruption, for example, a satellite firm would switch from the public source to the generators of a nearby private producer. "Shared production" refers to the possibility of firms coming together in a club type of arrangement

called "utility pool" to share the cost of infrastructural capital inputs by building their own facilities. This can be observed in industrial estates in Indonesia and Thailand. The above typology of private provision alternatives is applicable to all five infrastructure subsectors considered in this study.

Output Reduction

This response to infrastructural deficiencies is also common. Firms which are captive or use their own standby equipment are subject to output reduction either on a regular basis or when their own equipment fails to operate properly. However, the chief impact of output reduction necessarily falls on small firms which find it too expensive to pursue another response, or on very large power intensive firms which cannot find appropriate size equipment (e.g. generators) to meet their service needs. It is difficult to observe, but it undoubtedly happens that many small firms in Nigeria and Indonesia have either shut down or have failed to grow to any critical size because of infrastructural deficiencies. Also, births of new firms will be reduced if many must shut down soon after birth because of infrastructural inadequacies.

B. Capital Costs and Their Incidence

The survey results show that the private provision response was by far most dominant among manufacturers in Indonesia as was the case in Nigeria. Private provision response was less in Thailand indicating both the availability and the quality of services are better in Thailand.

Appendix Tables E1 through E8, F1 through F8, and G1 through G8 show the average current market values of various equipment and facilities used for own service provisions including generators, boreholes, radio equipment, motorcycles for messengers, and vehicles for shipment of goods, workers' commuting, and garbage disposal. Their shares or proportions (in the case of vehicles) with respect to the total value of the firm's machinery and equipment for production are summarized in Table 3.1.

We find that the capital value of generators and their accessories such as the switches and transformers is on the average (for those firms having generators) 13 percent of the total value of machinery and equipment in Indonesia which is slightly higher than 10 percent in Nigeria. However, the smaller Nigerian firms (with less than 50 employees) had a greater share (22 percent) of capital for self-generation of electricity than the small Indonesian firms (8 percent). The share of capital for boreholes in Nigeria was 2 percent, which is close to 1.6 percent in Thailand, but almost five times greater than in Indonesia. In all three countries, however, small firms invested about twice the large firms for own supply of water. The capital share for own water supply was highest for the small firms in Thailand at 3.6 percent.

Although 66 sample firms (37 percent) had own radio equipment for communication in Nigeria, this practice was not so common in Indonesia and Thailand (Appendix Tables G6 and F6). However, in all three countries, a substantial number of firms had motorcycles for messenger services indicating the need to supplement inadequate telephone services: 30 percent of sample firms in Nigeria had motorcycles, compared to 22 percent and 21 percent in Indonesia and Thailand, respectively. Table 3.1 shows that the incidence of capital investment for these services by small firms is prohibitively high compared to that of large firms.

The number of sample firms having private vehicles for shipment of goods was highest in Thailand, where 81 percent of the sample firms had such vehicles compared to 69 percent in Indonesia and 62 percent in Nigeria (Appendix Tables E3, F3, and G3). This implies that the Thai firms have a higher propensity to use their own trucks indicating the need to reduce uncertainties associated with traffic conditions in Thai cities. Table 3.1 shows that the burden of having own vehicles for shipment is five times higher for small firms than large firms in both Indonesia and Thailand while it was more than twice in Nigeria. The percent of sample firms having vehicles for workers' commuting was 32 percent in Indonesia, 10 percent in Thailand, compared to 26 percent in Nigeria (Appendix Tables B6, C6, and D6). Although 13 percent of the sample firms in Nigeria had vehicles for garbage disposal, the proportion was only 4 percent and 1 percent in Indonesia and Thailand, respectively.

The bottom line of Table 3.1 summarizes the extent of capital investment for private infrastructure provisions by manufacturers in the three countries. It shows the percent of the value of all private capital investments (including generators, boreholes, radio equipment, vehicles, and motorcycles) with respect to the value of the total capital (including machinery and equipment for production, all vehicles and motorcycles). The capital share of private infrastructure provisions is 15.7 percent in Indonesia, the highest among the three countries, followed by 13.7 percent in Nigeria and 7.8 percent in Thailand. The burden was about three times greater for small firms with 23 percent in Thailand and with 30 percent Nigeria, while in Indonesia small firms had 12. 5 percent, a little less than large firms.

Table 3.8 revealed that the capital share of private infrastructure provisions is 21 percent in Botabek (three metropolitan provinces surrounding Jakarta) and 17 percent in Semarang, the

secondary city included in the study, compared to 9 percent in Jakarta. Similarly, the capital share for the firms in Chiang Mai (the secondary city included in the study) was 22 percent compared 9 percent in Bangkok and 6 percent in the five metropolitan provinces surrounding Bangkok. The share for the small firms in Chiang Mai was as high as 51 percent according to the survey data. Tables 3.6 and 3.7 present more detailed information across regions for generators and boreholes. The opportunity costs foregone by sustaining such a substantial amount of capital investment in private provisions should be very high to the firms and to the society. More formal quantitative analysis is conducted in Report No. 2 and Report No. 3.

C. The Private Cost as A Measure of Willingness to Pay for Reliable Services

As documented above, manufacturers incur high capital cost in installing own facilities for providing their own services. In the case of electric power generation, the firms with own generators tend to install standby capacity sufficient to run the entire plant during a period of power interruption. We found that in most cases the standby generators can supply 100 percent of the power need for production plant operation. Therefore, the proportion of electricity consumption from own generators with respect to the total consumption including the public supply should be a good approximation of the capacity utilization of own generators during a time period such as one year. Table 3.2 shows the proportion of electric power supply from own generators. For the firms having generators, the proportion was 37 percent in Nigeria while it was 67 percent in Indonesia. The Indonesian manufacturers rely more on self-

generation of power. Moreover, the data indicate that large Indonesian firms use more electricity from own generators than small firms while the proportion was about the same in Nigeria.

Table 3.3 shows the total average cost of producing electricity from own generating facilities. It is striking to find that the average cost declines from 8.19 US dollars per kWh to 8 US cents as the scale of self-generation increases in the case of Nigeria and it goes down from 4.05 US dollars per kWh to 8 US cents in Indonesia, a clear evidence of economies of scale. The average cost incurred by the largest scale of self-generation was the same at 8 US cents in both countries, which is close to the internationally competitive unit cost of 7 US cents per kWh.

For the firms using generators as a whole, the average cost was 69 US cents in Nigeria (in 1987 when the survey was conducted), which is 10 times higher than the unit cost of efficient utilities, and 2.14 US dollars in Indonesia, 30 times higher than that of efficient utilities. The underutilized idle capacity of own generators must significantly contribute to this extremely high total average cost of private power generation in addition to the presence of the scale economies. Appendix Tables E10 and F10 show the breakdown of the total average cost into fixed cost and variable cost which included fuel, maintenance and parts and labor. The data for both countries reveal that as the scale of self-generation of electricity increases, the average variable cost becomes larger than the average fixed cost as expected.

The high cost of private provision sustained by the firms is the implicit value of service reliability that the firms are willing to pay for. More precise measures of willingness to pay at the margin in terms of shadow prices are presented in Report No. 2. The results in that report show that on average the shadow price of the last unit of electricity was higher than the actual

average (and marginal) cost for publicly provided electricity. The fact that the cost of the privately produced power is higher than the price of the publicly provided electricity gives the "premium" which manufacturers are willing to incur in order to insure themselves of an uninterrupted power supply at all times.

In the case of Nigeria, in 1987 the average NEPA price was 7 kobos per kWh, 1.74 US cents at then exchange rate of 4 nairas to a dollar. This means that the average unit cost of privately generated electricity for the Nigerian sample firms was 40 times higher than the NEPA price, and 260 times more for the small producers (the average of the first three categories in Table 3.3)! In 1989, NEPA price was raised to 32 kobos per kWh. Even so, the privately produced electricity was 9 times more expensive on the average.

In the case of Indonesia, with the average price of 100 Rupiah per kWh charged by PLN for industrial use, the privately produced electricity was 43 times more expensive on the average, almost the same as in Nigeria, but only 63 times more for the small producers, much less than the Nigerian case but still high. The average cost of 165 rupiah per kWh by the largest producer is still higher than the PLN price (Table 3.3).

The analysis indicates that the premium paid by firms varies with firm size. Such variation should be a central concern in the design of appropriate policies for both efficiency and equity reasons. Report No. 3 conducted policy simulations to study efficiency gains resulting from alternative tariff structures which take into account the premiums paid by different sizes of firms for obtaining electric power from different sources.

It is interesting to find that in both Indonesia and Thailand, firms having their own artesian wells rely almost entirely on their own water supply sources. Table 3.4 shows that Indonesian firms with own boreholes get 98 percent of water supply from their own wells while

Thai firms 99 percent. In Table 3.5, we find that there is evidence of economies of scale in own production of water as well in all three countries. Since the values for the largest two categories may not be reliable because of the small number of observations in those categories (see Table 3.4), considering only those values between the second and the fourth size categories, the average cost declined 4 times in Indonesia, 5 times in Thailand and 3 times in Nigeria. Therefore, the above analysis on the premium paid for electricity equally applies to the case of water.

IV. CONCLUSIONS AND POLICY IMPLICATIONS

The main objective of this report was to contrast and compare the results from the previous study on Nigeria with the new results obtained for Indonesia and Thailand using the establishment survey data collected on these two countries. The main elements of comparisons included (a) the extent and incidence of infrastructure deficiencies; (b) the extent of manufacturers' private provision responses to the deficiencies; (c) estimation of the capital shares of various private infrastructure investments; and (d) estimation of the average cost for producing own electricity and water. We have achieved these objectives successfully and feel that the establishment survey data collected in Indonesia and Thailand are of acceptable quality. These findings support the following maintained policy hypotheses which are rigorously modelled and tested in Report No. 2 and Report No. 3.

The main policy hypothesis coming out of the analysis of the new data is that greater efficiency gains would accrue from the policy environment where the government "opened up" the markets for power, water, and other various infrastructure services as in the case of Indonesia and Thailand, in contrast to the case of Nigeria where the government kept the policy of strictly protecting inefficient public enterprise while neglecting the wide spread inefficient private provisions by individual firms and households.

In fact, in both Indonesia and Thailand, the three regimes unobserved in Nigeria, namely, "joint production", "satellite behavior", and "shared production" (utility pools) are actively promoted. Encouraging private infrastructure provisions in turn reduces system congestion, hence, improving the reliability of service flows. In Report No. 3, we present the results of simulating alternative pricing policies to show efficiency gains that can be achieved by using public and private resources more efficiently in the supply of infrastructure services.

Table 2.1. Distribution of Manufacturing Establishments by Source of Electricity

Source of Electricity	Nigeria		Indonesia		Thailand	
	Percent	Number of Firms	Percent	Number of Firms	Percent	Number of Firms
Public Supply Only	7.8	14	34.5	100	94.0	282
Public Supply as Main	78.2	140	50.7	147	5.3	16
Generators as Main	11.2	20	10.7	31	0.7	2
Generators Only	2.8	5	4.1	12	0.0	0
All	100.0	179	100.0	290	100.0	300

NOTE: From Appendix Tables B1, C1, and D1.

Source: World Bank Nigeria Infrastructure Project Establishment Survey 1988.
World Bank Research Project (RPO 676-71) Establishment Survey for Indonesia and Thailand 1992.

Table 2.2. Percent of Manufacturing Establishments Without Private Generators or Boreholes in Each Employment Size Category

Employment Size	Nigeria		Indonesia		Thailand	
	Private Generators	Private Boreholes	Private Generators	Private Artesian Wells	Private Generators	Private Artesian Wells
1 - 19	68.8	100.0	40.0	80.0	100.0	87.9
20 - 49	8.6	85.7	52.1	48.9	97.3	82.4
50 - 99	0.0	63.6	32.1	42.9	98.5	82.4
100 - 199	0.0	31.4	29.0	30.7	98.2	70.4
200 - 499	0.0	34.6	13.6	34.1	83.0	63.8
500 - 999	0.0	26.7	31.6	31.6	81.3	56.3
1000 & over	0.0	25.0	10.0	20.0	62.5	50.0
All	7.8	55.9	34.5	40.0	94.0	75.7

NOTE: From Appendix Tables B2, B4, C2, C4, D2, and D4.

Source: World Bank Nigeria Infrastructure Project Establishment Survey 1988.
World Bank Research Project (RPO 676-71) Establishment Survey for Indonesia and Thailand 1992.

Table 2.3. Percent of Manufacturing Establishments Without Own Vehicles for Shipment, Workers, or Garbage Disposal in Each Employment Size Category

Employment Size	Nigeria			Indonesia			Thailand		
	For Shipment	For Worker	For Garbage Disposal	For Shipment	For Worker	For Garbage Disposal	For Shipment	For Worker	For Garbage Disposal
1 - 19	50.0	87.5	100.0	60.0	80.0	100.0	27.8	97.0	100.0
20 - 49	40.0	94.3	100.0	28.7	89.4	98.9	13.5	100.0	100.0
50 - 99	40.9	81.8	88.6	30.4	75.0	100.0	10.3	97.1	98.5
100 - 199	28.6	85.7	68.6	22.6	53.2	95.2	24.1	85.2	98.2
200 - 499	30.8	80.8	88.5	34.1	47.7	86.4	23.4	83.0	100.0
500 - 999	26.7	80.0	80.0	42.1	36.8	94.7	18.8	50.0	93.8
1000 & over	50.0	87.5	75.0	40.0	50.0	100.0	37.5	75.0	100.0
All	36.9	85.5	86.6	30.3	67.6	96.2	18.7	90.3	99.0

NOTE: From Appendix Tables B5, B6, B9, C5, C6, C9, D5, D6, and D9.

Source: World Bank Nigeria Infrastructure Project Establishment Survey 1988.
World Bank Research Project (RPO 676-71) Establishment Survey for Indonesia and Thailand 1992.

Table 2.4. Percent of Manufacturing Establishments Without Own Radio Equipment or Motorcycles in Each Employment Size Category

Employment Size	Nigeria		Indonesia		Thailand	
	Radio Equipment	Own Motorcycle	Radio Equipment	Own Motorcycle	Radio Equipment	Own Motorcycle
1 - 19	100.0	100.0	80.0	80.0	100.0	90.9
20 - 49	94.3	82.9	95.7	76.6	97.3	90.5
50 - 99	77.3	75.0	92.9	75.0	95.6	72.1
100 - 199	45.7	48.6	85.5	77.4	98.2	66.7
200 - 499	42.3	38.5	77.3	68.2	89.4	61.7
500 - 999	6.7	26.7	84.2	79.0	93.8	81.3
1000 & over	25.0	37.5	60.0	60.0	87.5	37.5
All	63.1	62.6	87.9	74.8	95.7	75.7

NOTE: From Appendix Tables B7, B8, C7, C8, D7, and D8.

Source: World Bank Nigeria Infrastructure Project Establishment Survey 1988.
World Bank Research Project (RPO 676-71) Establishment Survey for Indonesia and Thailand 1992.

Table 2.5. Extent of Losses from Power Failures

Extent of Losses	Nigeria	Indonesia	Thailand
Percent of Establishments Used Overtime Workers	24.6	38.6	19.3
Percent of Establishments Reported Production Loss or Hours Lost a/	21.8	65.9	42.3
Average Proportion of Production Loss or Hours Lost (%) a/	10.1	6.9	5.8

NOTE: From Appendix Tables B10, B11, C10, C11, D10, and D11.

a/ Production loss in the case of Nigeria; production hours lost in the case of Indonesia and Thailand.

Source: World Bank Nigeria Infrastructure Project Establishment Survey 1988.
World Bank Research Project (RPO 676-71) Establishment Survey for Indonesia and Thailand 1992.

Table 3.1. Values of Private Infrastructure Provision as Percent of Total Value of Machinery and Equipment (Percent)

Private Provision	NIGERIA			INDONESIA			THAILAND		
	Small[a] Firms	Large Firms	All	Small Firms	Large Firms	All	Small Firms	Large Firms	All
Generators & Accessories	22.10	9.65	9.96	8.14	13.62	13.41	72.73	5.05	5.12
Boreholes & Accessories	2.81	1.91	1.91	0.91	0.41	0.44	3.62	1.60	1.61
Radio Equipment	1.48	0.59	0.59	1.30	0.09	0.10	1.37	0.01	0.01
Vehicles for Workers	5.58	2.84	2.86	1.73	2.37	2.34	-	5.29	5.29
Vehicles for Shipment of Goods	10.95	4.47	4.62	9.63	1.60	1.82	28.65	5.00	5.68
Vehicles for Garbage Disposal	0.15	0.48	0.48	25.0	0.03	0.03	-	0.86	0.86
Motorcycles for Messengers	0.49	0.04	0.04	1.93	0.07	0.09	2.95	0.14	0.15
All Private Infrastructures[b]	30.52	13.27	13.67	12.47	15.90	15.73	23.08	7.32	7.79

NOTE: (1) The values are for the firms in each cell as a whole (i.e., ratios of the sums).

(2) The values of generators, boreholes, and radio equipment are included in the total value of machinery and equipment, but those of vehicles and motorcycles are not included.

(3) From Appendix Tables E1 - E8, F1 - F8, and G1 - G8.

a/ Small firms are establishments with less than 50 employees.

b/ As percent of the total value of capital. The numerator includes all private infrastructure provisions (generators, boreholes, radio equipment, vehicles and motorcycles); the denominator includes machinery and equipment, all vehicles and motorcycles.

Source: World Bank Nigeria Infrastructure Project Establishment Survey 1988.
World Bank Research Project (RPO 676-71) Establishment Survey for Indonesia and Thailand 1992.

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Table 3.2. Proportion of Electric Power Supply from Own Generators by Total Electric Consumption Category For Firms with Own Generators

Total Electricity Consumption a/ (1000 kWh)	Nigeria		Indonesia		Thailand	
	Number of Firms	Percent	Number of Firms	Percent	Number of Firms	Percent
1 - 4	-	-	5	28.6	-	-
5 - 9	-	-	3	30.4	-	-
10 - 19	-	-	13	20.8	-	-
20 - 49	9	36.5	21	38.7	-	-
50 - 99	21	37.8	19	22.9	1	90.0
100 - 199	17	38.5	32	28.7	1	0.0
200 - 499	41	43.5	44	12.0	-	-
500 - 999	34	36.1	23	45.3	4	0.0
1000 - 1999	20	43.4	15	19.1	3	21.1
2000 & more	23	36.6	15	79.8	9	35.9
All	165	37.2	190	66.7	18	35.2

NOTE: From Appendix Tables B1, C1, and D1.

a/ Total electricity consumption consists of electric power supply from own generators and public source.

Source: NIDB/IBRD Project Establishment Survey for Nigeria 1988.
World Bank Research Project (RPO 676-71) Establishment Survey for Indonesia 1992.

Table 3.3. Average Cost of Electric Power Generation by Size of Own Electricity Production

(per kWh)

Own Electricity Production (1000 kWh)	Nigeria		Indonesia	
	Naira	US$	Rupiah	US$
1 - 4	32.76 a/	8.190	8091.11	4.046
5 - 9	17.54 a/	4.385	6339.37	3.170
10 - 19	4.20	1.050	4560.73	2.280
20 - 49	2.22	0.555	1464.47	0.732
50 - 99	2.10	0.525	4377.85	2.189
100 - 199	1.04	0.260	998.83	0.499
200 - 499	0.73	0.183	1088.16 a/	0.544
500 - 999	0.69	0.173	138.69	0.069
1000 - 1999	0.29 a/	0.073	114.54 a/	0.057
2000 & over	0.32 a/	0.080	165.15 a/	0.083
All	2.75	0.688	4282.57	2.141
Number of Observations	164		182	

NOTE: (1) The exchange rates were 4 Naira/$ in 1987 and 2000 Rupiah/$ in 1992.

(2) The annualized values of generators were calculated at an interest rate of 10 percent per year.

(3) From Appendix Tables E10 and F10.

a/ The cell mean may not be representative because of the small number of observations in the cell.

Source: World Bank Nigeria Infrastructure Project Establishment Survey 1988.
World Bank Research Project (RPO 676-71) Establishment Survey for Indonesia and Thailand 1992.

Table 3.4. Proportion of Water Supply from Own Boreholes by Total Water Consumption Category For Firms with Own Boreholes

Total Water Consumption a/ (1000 gallons)	Nigeria		Total Water Consumption a/ (1000 cubic meters)	Indonesia		Thailand	
	Number of Firms	Percent		Number of Firms	Percent	Number of Firms	Percent
1 - 99	4	100.0	1 -9	90	95.5	26	92.5
100 - 499	20	74.0	10 - 49	50	92.8	16	92.1
500 - 999	8	89.8	50 - 99	13	99.2	6	84.1
1000 - 4999	24	75.9	100 - 499	12	90.2	11	67.5
5000 - 9999	9	78.7	500 - 999	3	100.0	4	96.7
10000 & more	14	71.4	1000 & more	6	100.0	9	99.9
All	79	72.9	All	174	98.4	73	99.4

NOTE: From Appendix Tables B4, C4, and D4.

a/ Total water consumption consists of water supply from own boreholes and public source.

Source: NIDB/IBRD Project Establishment Survey for Nigeria 1988.
World Bank Research Project (RPO 676-71) Establishment Survey for Indonesia 1992.

Table 3.5. Average Cost of Own Water Supply by Size of Own Water Production

Own Water Production (1000 Gallons)	Nigeria (per gallon)		Own Water Production (1000 Cubic Meters)	Indonesia (per cubic meter)		Thailand (per cubic meter)	
	Naira	US$		Rupiah	US$	Baht	US$
1 - 99	2.7024 a/	0.676	1 - 9	2961.85	1.481	107.455	4.298
100 - 499	0.3245	0.081	10 - 49	452.34	0.226	67.359	2.694
500 - 999	0.3588	0.090	50 - 99	104.58	0.052	15.508 a/	0.620
1000 - 4999	0.1110	0.028	100 - 499	111.24	0.056	12.554	0.502
5000 - 9999	0.0326 a/	0.008	500 - 999	15.84 a/	0.008	4.455 a/	0.178
10000 & over	0.0051 a/	0.001	1000 & over	2.06 a/	0.001	0.884 a/	0.035
All	0.3900	0.098	All	1721.04	0.861	59.931	2.397
Number of Observations	73		Number of Observations	174		68	

NOTE: (1) The exchange rates were 4 Naira/$ in 1987; 2000 Rupiah/$ and 25 Baht/$ in 1992.

(2) The annualized values of boreholes (or artesian wells) were calculated at an interest rate of 10 percent per year.

(3) From Appendix Tables E9, F9, and G9.

a/ The cell mean may not be representative because of the small number of observations in the cell.

Source: World Bank Nigeria Infrastructure Project Establishment Survey 1988.
World Bank Research Project (RPO 676-71) Establishment Survey for Indonesia and Thailand 1992.

Table 3.6. Value of Private Generators and Boreholes as Percent of Total Value of Machinery and Equipment by State, Nigeria

(Percent)

State	Firm Size	Generators	Boreholes
Lagos	Small a/	25.6	2.81
	Large	11.5	2.08
	All	11.40	2.09
Anambra	Small	27.80	21.33
	Large	6.35	1.88
	All	7.34	21.33
Imo	Small	30.75	1.88
	Large	4.42	1.57
	All	4.49	1.88
Kaduna	Small	29.21	-
	Large	12.97	1.57
	All	13.36	1.57
Kano	Small	12.49	-
	Large	7.21	0.49
	All	7.47	0.49
Five States	Small	22.10	2.81
	Large	9.65	1.91
	All	9.96	1.91

NOTE: (1) The values are for the firms in each cell as a whole (i.e., ratios of the sums).

(2) The values of generators, boreholes, and radio equipment are included in the total value of machinery and equipment, but those of vehicles and motorcycles are not included.

(3) From Appendix Tables E1 and E2.

a/ Small firms are establishments with less than 50 employees.

Source: World Bank Nigeria Infrastructure Project Establishment Survey 1988.
World Bank Research Project (RPO 676-71) Establishment Survey for Indonesia and Thailand 1992.

Table 3.7. Value of Private Generators and Boreholes as Percent of Total Value of Machinery and Equipment by Region, Indonesia and Thailand

(Percent)

Indonesia				Thailand			
Regions	Firm Size	Generators	Boreholes	Regions	Firm Size	Generators	Boreholes
Jakarta	Small a/	4.94	0.79	Bangkok	Small	-	-
	Large	5.70	0.33		Large	1.84	1.42
	All	5.65	0.36		All	1.84	1.42
Metropolitan (Botabek)	Small	39.90	2.27	Metropolitan (BMR)	Small	70.83	18.58
	Large	18.27	0.48		Large	4.36	1.77
	All	18.38	0.50		All	4.41	1.77
Semarang	Small	7.25	0.92	Chiang Mai	Small	75.00	2.87
	Large	17.67	0.67		Large	23.90	0.68
	All	16.02	0.71		All	24.29	0.80
Three Regions	Small	8.14	0.91	Three Regions	Small	72.73	3.62
	Large	13.62	0.41		Large	5.05	1.60
	All	13.41	0.44		All	5.12	1.61

NOTE: (1) The values are for the firms in each cell as a whole (i.e., ratios of the sums).

(2) The values of generators, boreholes, and radio equipment are included in the total value of machinery and equipment, but those of vehicles and motorcycles are not included.

(3) From Appendix Tables F1, F2, G1, and G2.

a/ Small firms are establishments with less than 50 employees.

Source: World Bank Nigeria Infrastructure Project Establishment Survey 1988.
World Bank Research Project (RPO 676-71) Establishment Survey for Indonesia and Thailand 1992.

Table 3.8. Values of All Private Infrastructures as Percent of Total Value of Capital by Region, Nigeria, Indonesia, and Thailand [b/]

(Percent)

Nigeria			Indonesia			Thailand		
State	Firm Size	Percent	Region	Firm Size	Percent	Region	Firm Size	Percent
Lagos	Small [a/]	34.62	Jakarta	Small	9.32	Bangkok	Small	22.43
	Large	15.89		Large	8.88		Large	8.35
	All	16.19		All	8.91		All	8.94
Anambra	Small	42.82	Metropolitan (Botabek)	Small	19.72	Metropolitan (BMR)	Small	10.11
	Large	9.67		Large	20.62		Large	6.06
	All	11.73		All	20.60		All	6.13
Imo	Small	34.82	Semarang	Small	12.74	Chiang Mai	Small	51.21
	Large	12.02		Large	17.39		Large	18.26
	All	12.09		All	16.75		All	21.89
Kaduna	Small	31.83						
	Large	13.03						
	All	13.36						
Kano	Small	16.90						
	Large	8.24						
	All	8.61						
Five States	Small	30.52	Three Regions	Small	12.47	Three Regions	Small	23.08
	Large	13.27		Large	15.90		Large	7.32
	All	13.67		All	15.73		All	7.79

NOTE: (1) The values are for the firms in each cell as a whole (i.e., ratios of the sums).

(2) From Appendix Tables E8, F8, and G8.

a/ Small firms are establishments with less than 50 employees.

b/ The numerator includes all private infrastructure provisions (generators, boreholes, radio equipment, vehicles and motorcycles); the denominator includes machinery and equipment, all vehicles and motorcycles.

Source: World Bank Nigeria Infrastructure Project Establishment Survey 1988.
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NOTE: A comprehensive bibliography appears in Lee and Anas (1992b).

10/29/94

Report No. 1: Descriptive Analysis

Appendix Tables

APPENDIX TABLES

Table A1. Distribution of Manufactruring Establishments by State and Employment Size, Nigeria

State	Firm Size (# of Employees)							
Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
1. Lagos	2 1.12 2.44 12.50	16 8.94 19.51 45.71	22 12.29 26.83 50.00	15 8.38 18.29 42.86	14 7.82 17.07 53.85	10 5.59 12.20 66.67	3 1.68 3.66 37.50	82 45.81
2. Anambra	12 6.70 46.15 75.00	8 4.47 30.77 22.86	3 1.68 11.54 6.82	0 0.00 0.00 0.00	1 0.56 3.85 3.85	1 0.56 3.85 6.67	1 0.56 3.85 12.50	26 14.53
3. Imo	1 0.56 10.00 6.25	0 0.00 0.00 0.00	2 1.12 20.00 4.55	2 1.12 20.00 5.71	3 1.68 30.00 11.54	1 0.56 10.00 6.67	1 0.56 10.00 12.50	10 5.59
4. Kaduna	0 0.00 0.00 0.00	4 2.23 14.29 11.43	9 5.03 32.14 20.45	6 3.35 21.43 17.14	4 2.23 14.29 15.38	2 1.12 7.14 13.33	3 1.68 10.71 37.50	28 15.64
5. Kano	1 0.56 3.03 6.25	7 3.91 21.21 20.00	8 4.47 24.24 18.18	12 6.70 36.36 34.29	4 2.23 12.12 15.38	1 0.56 3.03 6.67	0 0.00 0.00 0.00	33 18.44
Total	16 8.94	35 19.55	44 24.58	35 19.55	26 14.53	15 8.38	8 4.47	179 100.00

Table A2. Distribution of Manufactruring Establishments by State and Industry (SIC code) Category, Nigeria

State	SIC code from 1st product									
Frequency Percent Row Pct Col Pct	31.Food/ Bevrg	32.Textile/Leath	33.Wood	34.Paper	35.Chemical/Rubb	36.Non-Metal Min	37.Basic -Metal	38.Fab-Metal Elc	39.Other	Total
1. Lagos	6 3.35 7.32 30.00	10 5.59 12.20 29.41	4 2.23 4.88 44.44	7 3.91 8.54 36.84	23 12.85 28.05 65.71	3 1.68 3.66 20.00	2 1.12 2.44 66.67	25 13.97 30.49 59.52	2 1.12 2.44 100.00	82 45.81
2. Anambra	3 1.68 11.54 15.00	1 0.56 3.85 2.94	2 1.12 7.69 22.22	6 3.35 23.08 31.58	4 2.23 15.38 11.43	8 4.47 30.77 53.33	0 0.00 0.00 0.00	2 1.12 7.69 4.76	0 0.00 0.00 0.00	26 14.53
3. Imo	1 0.56 10.00 5.00	3 1.68 30.00 8.82	0 0.00 0.00 0.00	2 1.12 20.00 10.53	2 1.12 20.00 5.71	1 0.56 10.00 6.67	0 0.00 0.00 0.00	1 0.56 10.00 2.38	0 0.00 0.00 0.00	10 5.59
4. Kaduna	4 2.23 14.29 20.00	6 3.35 21.43 17.65	2 1.12 7.14 22.22	3 1.68 10.71 15.79	3 1.68 10.71 8.57	1 0.56 3.57 6.67	0 0.00 0.00 0.00	9 5.03 32.14 21.43	0 0.00 0.00 0.00	28 15.64
5. Kano	6 3.35 18.18 30.00	14 7.82 42.42 41.18	1 0.56 3.03 11.11	1 0.56 3.03 5.26	3 1.68 9.09 8.57	2 1.12 6.06 13.33	1 0.56 3.03 33.33	5 2.79 15.15 11.90	0 0.00 0.00 0.00	33 18.44
Total	20 11.17	34 18.99	9 5.03	19 10.61	35 19.55	15 8.38	3 1.68	42 23.46	2 1.12	179 100.00

Table A3. Distribution of Manufactruring Establishments by Industry (SIC code) and Employment Size, Nigeria

SIC code from 1st product Firm Size (# of Employees)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
31.Food/Bevrg	1 0.56 5.00 6.25	7 3.91 35.00 20.00	4 2.23 20.00 9.09	4 2.23 20.00 11.43	4 2.23 20.00 15.38	0 0.00 0.00 0.00	0 0.00 0.00 0.00	20 11.17
32.Textile/Leath	1 0.56 2.94 6.25	3 1.68 8.82 8.57	7 3.91 20.59 15.91	9 5.03 26.47 25.71	4 2.23 11.76 15.38	4 2.23 11.76 26.67	6 3.35 17.65 75.00	34 18.99
33.Wood	1 0.56 11.11 6.25	3 1.68 33.33 8.57	2 1.12 22.22 4.55	1 0.56 11.11 2.86	2 1.12 22.22 7.69	0 0.00 0.00 0.00	0 0.00 0.00 0.00	9 5.03
34.Paper	5 2.79 26.32 31.25	6 3.35 31.58 17.14	3 1.68 15.79 6.82	2 1.12 10.53 5.71	1 0.56 5.26 3.85	2 1.12 10.53 13.33	0 0.00 0.00 0.00	19 10.61
35.Chemical/Rubb	0 0.00 0.00 0.00	5 2.79 14.29 14.29	14 7.82 40.00 31.82	7 3.91 20.00 20.00	4 2.23 11.43 15.38	3 1.68 8.57 20.00	2 1.12 5.71 25.00	35 19.55
36.Non-Metal Min	7 3.91 46.67 43.75	0 0.00 0.00 0.00	3 1.68 20.00 6.82	2 1.12 13.33 5.71	3 1.68 20.00 11.54	0 0.00 0.00 0.00	0 0.00 0.00 0.00	15 8.38
37.Basic-Metal	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	2 1.12 66.67 5.71	0 0.00 0.00 0.00	1 0.56 33.33 6.67	0 0.00 0.00 0.00	3 1.68
38.Fab-Metal Elc	1 0.56 2.38 6.25	10 5.59 23.81 28.57	10 5.59 23.81 22.73	8 4.47 19.05 22.86	8 4.47 19.05 30.77	5 2.79 11.90 33.33	0 0.00 0.00 0.00	42 23.46
39.Other	0 0.00 0.00 0.00	1 0.56 50.00 2.86	1 0.56 50.00 2.27	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	2 1.12
Total	16 8.94	35 19.55	44 24.58	35 19.55	26 14.53	15 8.38	8 4.47	179 100.00

Table A4. Distribution of Manufactruring Establishments by Region and Employment Size, Indonesia

Region	Firm Size (# of Employees)							
Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
Jakarta	1 0.34 0.70 20.00	54 18.62 38.03 57.45	27 9.31 19.01 48.21	28 9.66 19.72 45.16	20 6.90 14.08 45.45	9 3.10 6.34 47.37	3 1.03 2.11 30.00	142 48.97
Botabek	3 1.03 2.83 60.00	30 10.34 28.30 31.91	16 5.52 15.09 28.57	28 9.66 26.42 45.16	18 6.21 16.98 40.91	7 2.41 6.60 36.84	4 1.38 3.77 40.00	106 36.55
Semarang	1 0.34 2.38 20.00	10 3.45 23.81 10.64	13 4.48 30.95 23.21	6 2.07 14.29 9.68	6 2.07 14.29 13.64	3 1.03 7.14 15.79	3 1.03 7.14 30.00	42 14.48
Total	5 1.72	94 32.41	56 19.31	62 21.38	44 15.17	19 6.55	10 3.45	290 100.00

Table A5. Distribution of Manufactruring Establishments by Region and Industry (SIC code) Category, Indonesia

Region	SIC Code from major product									
Frequency Percent Row Pct Col Pct	31.Food/ Bevrg	32.Textile/Leath	33.Wood	34.Paper	35.Chemical/Rubb	36.Non-Metal Min	37.Basic -Metal	38.Fab-Metal Elc	39.Other	Total
Jakarta	17 5.86 11.97 36.96	45 15.52 31.69 67.16	13 4.48 9.15 54.17	11 3.79 7.75 55.00	27 9.31 19.01 45.76	6 2.07 4.23 33.33	0 0.00 0.00 0.00	22 7.59 15.49 47.83	1 0.34 0.70 14.29	142 48.97
Botabek	15 5.17 14.15 32.61	15 5.17 14.15 22.39	9 3.10 8.49 37.50	6 2.07 5.66 30.00	22 7.59 20.75 37.29	11 3.79 10.38 61.11	2 0.69 1.89 66.67	20 6.90 18.87 43.48	6 2.07 5.66 85.71	106 36.55
Semarang	14 4.83 33.33 30.43	7 2.41 16.67 10.45	2 0.69 4.76 8.33	3 1.03 7.14 15.00	10 3.45 23.81 16.95	1 0.34 2.38 5.56	1 0.34 2.38 33.33	4 1.38 9.52 8.70	0 0.00 0.00 0.00	42 14.48
Total	46 15.86	67 23.10	24 8.28	20 6.90	59 20.34	18 6.21	3 1.03	46 15.86	7 2.41	290 100.00

Table A6. Distribution of Manufacturing Establishments by Industry (SIC code) and Employment Size, Indonesia

SIC Code from major product — Firm Size (# of Employees)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
31.Food/Bevrg	2 0.69 4.35 40.00	23 7.93 50.00 24.47	9 3.10 19.57 16.07	7 2.41 15.22 11.29	2 0.69 4.35 4.55	2 0.69 4.35 10.53	1 0.34 2.17 10.00	46 15.86
32.Textile/Leath	1 0.34 1.49 20.00	21 7.24 31.34 22.34	12 4.14 17.91 21.43	8 2.76 11.94 12.90	9 3.10 13.43 20.45	10 3.45 14.93 52.63	6 2.07 8.96 60.00	67 23.10
33.Wood	0 0.00 0.00 0.00	8 2.76 33.33 8.51	3 1.03 12.50 5.36	6 2.07 25.00 9.68	6 2.07 25.00 13.64	1 0.34 4.17 5.26	0 0.00 0.00 0.00	24 8.28
34.Paper	0 0.00 0.00 0.00	7 2.41 35.00 7.45	5 1.72 25.00 8.93	6 2.07 30.00 9.68	2 0.69 10.00 4.55	0 0.00 0.00 0.00	0 0.00 0.00 0.00	20 6.90
35.Chemical/Rubb	0 0.00 0.00 0.00	20 6.90 33.90 21.28	13 4.48 22.03 23.21	17 5.86 28.81 27.42	6 2.07 10.17 13.64	1 0.34 1.69 5.26	2 0.69 3.39 20.00	59 20.34
36.Non-Metal Min	0 0.00 0.00 0.00	5 1.72 27.78 5.32	3 1.03 16.67 5.36	3 1.03 16.67 4.84	5 1.72 27.78 11.36	2 0.69 11.11 10.53	0 0.00 0.00 0.00	18 6.21
37.Basic-Metal	1 0.34 33.33 20.00	0 0.00 0.00 0.00	1 0.34 33.33 1.79	0 0.00 0.00 0.00	1 0.34 33.33 2.27	0 0.00 0.00 0.00	0 0.00 0.00 0.00	3 1.03
38.Fab-Metal Elc	0 0.00 0.00 0.00	9 3.10 19.57 9.57	10 3.45 21.74 17.86	14 4.83 30.43 22.58	11 3.79 23.91 25.00	2 0.69 4.35 10.53	0 0.00 0.00 0.00	46 15.86
39.Other	1 0.34 14.29 20.00	1 0.34 14.29 1.06	0 0.00 0.00 0.00	1 0.34 14.29 1.61	2 0.69 28.57 4.55	1 0.34 14.29 5.26	1 0.34 14.29 10.00	7 2.41
Total	5 1.72	94 32.41	56 19.31	62 21.38	44 15.17	19 6.55	10 3.45	290 100.00

Table A7. Distribution of Manufactruring Establishments by Region and Employment Size, Thailand

Region	Firm Size (# of Employees)							
Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
Bangkok	24 8.00 16.44 72.73	39 13.00 26.71 52.70	36 12.00 24.66 52.94	19 6.33 13.01 35.19	19 6.33 13.01 40.43	3 1.00 2.05 18.75	6 2.00 4.11 75.00	146 48.67
Metropolitan	3 1.00 2.88 9.09	17 5.67 16.35 22.97	26 8.67 25.00 38.24	22 7.33 21.15 40.74	23 7.67 22.12 48.94	11 3.67 10.58 68.75	2 0.67 1.92 25.00	104 34.67
North	6 2.00 12.00 18.18	18 6.00 36.00 24.32	6 2.00 12.00 8.82	13 4.33 26.00 24.07	5 1.67 10.00 10.64	2 0.67 4.00 12.50	0 0.00 0.00 0.00	50 16.67
Total	33 11.00	74 24.67	68 22.67	54 18.00	47 15.67	16 5.33	8 2.67	300 100.00

Table A8. Distribution of Manufactruring Establishments by Region and Industry (SIC code) Category, Thailand

Region	SIC code from major product									
Frequency Percent Row Pct Col Pct	31.Food/ Bevrg	32.Texti le/Leath	33.Wood	34.Paper	35.Chemi cal/Rubb	36.Non-M etal Min	37.Basic -Metal	38.Fab-M etal Elc	39.Other	Total
Bangkok	12 4.00 8.22 48.00	68 22.67 46.58 61.82	4 1.33 2.74 16.67	7 2.33 4.79 50.00	22 7.33 15.07 68.75	1 0.33 0.68 5.26	0 0.00 0.00 0.00	29 9.67 19.86 44.62	3 1.00 2.05 50.00	146 48.67
Metropolitan	4 1.33 3.85 16.00	35 11.67 33.65 31.82	7 2.33 6.73 29.17	6 2.00 5.77 42.86	9 3.00 8.65 28.12	5 1.67 4.81 26.32	5 1.67 4.81 100.00	32 10.67 30.77 49.23	1 0.33 0.96 16.67	104 34.67
North	9 3.00 18.00 36.00	7 2.33 14.00 6.36	13 4.33 26.00 54.17	1 0.33 2.00 7.14	1 0.33 2.00 3.12	13 4.33 26.00 68.42	0 0.00 0.00 0.00	4 1.33 8.00 6.15	2 0.67 4.00 33.33	50 16.67
Total	25 8.33	110 36.67	24 8.00	14 4.67	32 10.67	19 6.33	5 1.67	65 21.67	6 2.00	300 100.00

Table A9. Distribution of Manufactruring Establishments by Industry (SIC code) and Employment Size, Thailand

SIC code from major product — Firm Size (# of Employees)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
31.Food/Bevrg	5 1.67 20.00 15.15	4 1.33 16.00 5.41	7 2.33 28.00 10.29	2 0.67 8.00 3.70	5 1.67 20.00 10.64	1 0.33 4.00 6.25	1 0.33 4.00 12.50	25 8.33
32.Textile/Leath	8 2.67 7.27 24.24	25 8.33 22.73 33.78	26 8.67 23.64 38.24	24 8.00 21.82 44.44	17 5.67 15.45 36.17	5 1.67 4.55 31.25	5 1.67 4.55 62.50	110 36.67
33.Wood	8 2.67 33.33 24.24	8 2.67 33.33 10.81	1 0.33 4.17 1.47	3 1.00 12.50 5.56	2 0.67 8.33 4.26	2 0.67 8.33 12.50	0 0.00 0.00 0.00	24 8.00
34.Paper	0 0.00 0.00 0.00	1 0.33 7.14 1.35	3 1.00 21.43 4.41	4 1.33 28.57 7.41	6 2.00 42.86 12.77	0 0.00 0.00 0.00	0 0.00 0.00 0.00	14 4.67
35.Chemical/Rubb	3 1.00 9.38 9.09	5 1.67 15.63 6.76	12 4.00 37.50 17.65	4 1.33 12.50 7.41	5 1.67 15.63 10.64	2 0.67 6.25 12.50	1 0.33 3.12 12.50	32 10.67
36.Non-Metal Min	2 0.67 10.53 6.06	8 2.67 42.11 10.81	2 0.67 10.53 2.94	5 1.67 26.32 9.26	2 0.67 10.53 4.26	0 0.00 0.00 0.00	0 0.00 0.00 0.00	19 6.33
37.Basic-Metal	0 0.00 0.00 0.00	0 0.00 0.00 0.00	4 1.33 80.00 5.88	0 0.00 0.00 0.00	1 0.33 20.00 2.13	0 0.00 0.00 0.00	0 0.00 0.00 0.00	5 1.67
38.Fab-Metal Eic	6 2.00 9.23 18.18	22 7.33 33.85 29.73	13 4.33 20.00 19.12	9 3.00 13.85 16.67	8 2.67 12.31 17.02	6 2.00 9.23 37.50	1 0.33 1.54 12.50	65 21.67
39.Other	1 0.33 16.67 3.03	1 0.33 16.67 1.35	0 0.00 0.00 0.00	3 1.00 50.00 5.56	1 0.33 16.67 2.13	0 0.00 0.00 0.00	0 0.00 0.00 0.00	6 2.00
Total	33 11.00	74 24.67	68 22.67	54 18.00	47 15.67	16 5.33	8 2.67	300 100.00

Table B1. Distribution of Manufacturing Establishments by Region and Source of Electricity, Nigeria

REGION	ELECTRIC (SOURCE OF ELECTRICITY)				
Frequency Percent Row Pct Col Pct	NEPA only	NEPA main	Own Gen. main	Own Gen. only	Total
Lagos	2 1.12 2.44 14.29	68 37.99 82.93 48.57	10 5.59 12.20 50.00	2 1.12 2.44 40.00	82 45.81
Anambra/Imo	12 6.70 33.33 85.71	22 12.29 61.11 15.71	1 0.56 2.78 5.00	1 0.56 2.78 20.00	36 20.11
Kaduna/Kano	0 0.00 0.00 0.00	50 27.93 81.97 35.71	9 5.03 14.75 45.00	2 1.12 3.28 40.00	61 34.08
Total	14 7.82	140 78.21	20 11.17	5 2.79	179 100.00

Table B2. Distribution of Manufacturing Establishments by Source of Electricity and Employment Size, Nigeria

ELECTRIC (SOURCE OF ELECTRICITY) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
NEPA only	11	3	0	0	0	0	0	14
	6.15	1.68	0.00	0.00	0.00	0.00	0.00	7.82
	78.57	21.43	0.00	0.00	0.00	0.00	0.00	
	68.75	8.57	0.00	0.00	0.00	0.00	0.00	
NEPA main	3	26	35	30	25	13	8	140
	1.68	14.53	19.55	16.76	13.97	7.26	4.47	78.21
	2.14	18.57	25.00	21.43	17.86	9.29	5.71	
	18.75	74.29	79.55	85.71	96.15	86.67	100.00	
Own Generators main	2	4	8	5	0	1	0	20
	1.12	2.23	4.47	2.79	0.00	0.56	0.00	11.17
	10.00	20.00	40.00	25.00	0.00	5.00	0.00	
	12.50	11.43	18.18	14.29	0.00	6.67	0.00	
Own Generators only	0	2	1	0	1	1	0	5
	0.00	1.12	0.56	0.00	0.56	0.56	0.00	2.79
	0.00	40.00	20.00	0.00	20.00	20.00	0.00	
	0.00	5.71	2.27	0.00	3.85	6.67	0.00	
Total	16	35	44	35	26	15	8	179
	8.94	19.55	24.58	19.55	14.53	8.38	4.47	100.00

Table B3. Distribution of Manufacturing Establishments Power Outage by Employment Size, Nigeria

OUTAGE (AVERAGE NO. OF OUTAGES/week) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
Less than 5/week	5 2.79 10.00 31.25	10 5.59 20.00 28.57	13 7.26 26.00 29.55	8 4.47 16.00 22.86	5 2.79 10.00 19.23	6 3.35 12.00 40.00	3 1.68 6.00 37.50	50 27.93
5 - 10 / week	9 5.03 9.89 56.25	20 11.17 21.98 57.14	22 12.29 24.18 50.00	19 10.61 20.88 54.29	15 8.38 16.48 57.69	4 2.23 4.40 26.67	2 1.12 2.20 25.00	91 50.84
11 & more / week	0 0.00 0.00 0.00	4 2.23 13.33 11.43	7 3.91 23.33 15.91	8 4.47 26.67 22.86	4 2.23 13.33 15.38	4 2.23 13.33 26.67	3 1.68 10.00 37.50	30 16.76
N/A	2 1.12 25.00 12.50	1 0.56 12.50 2.86	2 1.12 25.00 4.55	0 0.00 0.00 0.00	2 1.12 25.00 7.69	1 0.56 12.50 6.67	0 0.00 0.00 0.00	8 4.47
Total	16 8.94	35 19.55	44 24.58	35 19.55	26 14.53	15 8.38	8 4.47	179 100.00

Table B4. Distribution of Manufacturing Establishments Boreholes by Employment Size, Nigeria

BOREHOLE (OWN BOREHOLES FOR PRODUCTION) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
YES	0	5	16	24	17	11	6	79
	0.00	2.79	8.94	13.41	9.50	6.15	3.35	44.13
	0.00	6.33	20.25	30.38	21.52	13.92	7.59	
	0.00	14.29	36.36	68.57	65.38	73.33	75.00	
NO	16	30	28	11	9	4	2	100
	8.94	16.76	15.64	6.15	5.03	2.23	1.12	55.87
	16.00	30.00	28.00	11.00	9.00	4.00	2.00	
	100.00	85.71	63.64	31.43	34.62	26.67	25.00	
Total	16	35	44	35	26	15	8	179
	8.94	19.55	24.58	19.55	14.53	8.38	4.47	100.00

Table B5. Distribution of Manufacturing Establishments Vehicles for Shipment by Employment Size, Nigeria

VEHICLES (OWN VEHICLES FOR SHIPMENT) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
YES	8	21	26	25	18	11	4	113
	4.47	11.73	14.53	13.97	10.06	6.15	2.23	63.13
	7.08	18.58	23.01	22.12	15.93	9.73	3.54	
	50.00	60.00	59.09	71.43	69.23	73.33	50.00	
NO	8	14	18	10	8	4	4	66
	4.47	7.82	10.06	5.59	4.47	2.23	2.23	36.87
	12.12	21.21	27.27	15.15	12.12	6.06	6.06	
	50.00	40.00	40.91	28.57	30.77	26.67	50.00	
Total	16	35	44	35	26	15	8	179
	8.94	19.55	24.58	19.55	14.53	8.38	4.47	100.00

Table B6. Distribution of Manufacturing Establishments Vehicles for Workers by Employment Size, Nigeria

VEHICLEW (OWN VEHICLES FOR WORKERS) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
YES	2	2	8	5	5	3	1	26
	1.12	1.12	4.47	2.79	2.79	1.68	0.56	14.53
	7.69	7.69	30.77	19.23	19.23	11.54	3.85	
	12.50	5.71	18.18	14.29	19.23	20.00	12.50	
NO	14	33	36	30	21	12	7	153
	7.82	18.44	20.11	16.76	11.73	6.70	3.91	85.47
	9.15	21.57	23.53	19.61	13.73	7.84	4.58	
	87.50	94.29	81.82	85.71	80.77	80.00	87.50	
Total	16	35	44	35	26	15	8	179
	8.94	19.55	24.58	19.55	14.53	8.38	4.47	100.00

Table B7. Distribution of Manufacturing Establishments Motorcycles for Messengers by Employment Size, Nigeria

MOTORCYC (OWN MOTORCYCLES FOR MESSENGER) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
YES	0	6	11	18	16	11	5	67
	0.00	3.35	6.15	10.06	8.94	6.15	2.79	37.43
	0.00	8.96	16.42	26.87	23.88	16.42	7.46	
	0.00	17.14	25.00	51.43	61.54	73.33	62.50	
NO	16	29	33	17	10	4	3	112
	8.94	16.20	18.44	9.50	5.59	2.23	1.68	62.57
	14.29	25.89	29.46	15.18	8.93	3.57	2.68	
	100.00	82.86	75.00	48.57	38.46	26.67	37.50	
Total	16	35	44	35	26	15	8	179
	8.94	19.55	24.58	19.55	14.53	8.38	4.47	100.00

Table B8. Distribution of Manufacturing Establishments Radio Equipment by Employment Size, Nigeria

RADIO (OWN RADIO-TRANSMITTING EQUIP) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
YES	0	2	10	19	15	14	6	66
	0.00	1.12	5.59	10.61	8.38	7.82	3.35	36.87
	0.00	3.03	15.15	28.79	22.73	21.21	9.09	
	0.00	5.71	22.73	54.29	57.69	93.33	75.00	
NO	16	33	34	16	11	1	2	113
	8.94	18.44	18.99	8.94	6.15	0.56	1.12	63.13
	14.16	29.20	30.09	14.16	9.73	0.88	1.77	
	100.00	94.29	77.27	45.71	42.31	6.67	25.00	
Total	16	35	44	35	26	15	8	179
	8.94	19.55	24.58	19.55	14.53	8.38	4.47	100.00

Table B9. Distribution of Manufacturing Establishments Vehicles for Garbage Disposal by Employment Size, Nigeria

VEHICLEG (OWN VEHICLES FOR GARBAGE) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
YES	0	0	5	11	3	3	2	24
	0.00	0.00	2.79	6.15	1.68	1.68	1.12	13.41
	0.00	0.00	20.83	45.83	12.50	12.50	8.33	
	0.00	0.00	11.36	31.43	11.54	20.00	25.00	
NO	16	35	39	24	23	12	6	155
	8.94	19.55	21.79	13.41	12.85	6.70	3.35	86.59
	10.32	22.58	25.16	15.48	14.84	7.74	3.87	
	100.00	100.00	88.64	68.57	88.46	80.00	75.00	
Total	16	35	44	35	26	15	8	179
	8.94	19.55	24.58	19.55	14.53	8.38	4.47	100.00

Table B10. Distribution of Manufacturing Establishments Use of Overtime Labor due to Power Outages by Employment Size, Nigeria

OVERTIME (OVERTIME LABOR DUE TO POWER FAILURE) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
USED	3	4	17	8	7	2	3	44
	1.68	2.23	9.50	4.47	3.91	1.12	1.68	24.58
	6.82	9.09	38.64	18.18	15.91	4.55	6.82	
	18.75	11.43	38.64	22.86	26.92	13.33	37.50	
DID NOT USE	13	31	27	27	19	13	5	135
	7.26	17.32	15.08	15.08	10.61	7.26	2.79	75.42
	9.63	22.96	20.00	20.00	14.07	9.63	3.70	
	81.25	88.57	61.36	77.14	73.08	86.67	62.50	
Total	16	35	44	35	26	15	8	179
	8.94	19.55	24.58	19.55	14.53	8.38	4.47	100.00

Table B11. Percent of Total Output Lost due to Power Shutdowns by State and Employment Size, Nigeria

Power Interruption			Loss (%)
Whole Country	ALL	MEAN	10.08
		N	39.00
	Small (LT 50)	MEAN	8.55
		N	11.00
	Large (GE 50)	MEAN	10.68
		N	28.00
1. LAGOS	ALL	MEAN	8.47
		N	19.00
	Small (LT 50)	MEAN	9.75
		N	4.00
	Large (GE 50)	MEAN	8.13
		N	15.00
2. ANAMBRA	ALL	MEAN	6.00
		N	8.00
	Small (LT 50)	MEAN	5.83
		N	6.00
	Large (GE 50)	MEAN	6.50
		N	2.00
3. IMO	ALL	MEAN	19.00
		N	3.00
	Large (GE 50)	MEAN	19.00
		N	3.00
4. KADUNA	ALL	MEAN	17.50
		N	4.00
	Large (GE 50)	MEAN	17.50
		N	4.00
5. KANO	ALL	MEAN	11.40
		N	5.00
	Small (LT 50)	MEAN	20.00
		N	1.00
	Large (GE 50)	MEAN	9.25
		N	4.00

Table C1. Distribution of Manufacturing Establishments by Region and Source of Electricity, Indonesia

REGION	ELECTRIC (SOURCE OF ELECTRICITY)				
Frequency Percent Row Pct Col Pct	Public only	Public main	Own Gen. main	Own Gen. only	Total
Jakarta	60 20.69 42.25 60.00	65 22.41 45.77 44.22	14 4.83 9.86 45.16	3 1.03 2.11 25.00	142 48.97
Botabek	29 10.00 27.36 29.00	61 21.03 57.55 41.50	9 3.10 8.49 29.03	7 2.41 6.60 58.33	106 36.55
Semarang	11 3.79 26.19 11.00	21 7.24 50.00 14.29	8 2.76 19.05 25.81	2 0.69 4.76 16.67	42 14.48
Total	100 34.48	147 50.69	31 10.69	12 4.14	290 100.00

Table C2. Distribution of Manufacturing Establishments by Source of Electricity and Employment Size, Indonesia

ELECTRIC (SOURCE OF ELECTRICITY) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
Public only	2	49	18	18	6	6	1	100
	0.69	16.90	6.21	6.21	2.07	2.07	0.34	34.48
	2.00	49.00	18.00	18.00	6.00	6.00	1.00	
	40.00	52.13	32.14	29.03	13.64	31.58	10.00	
Public main	2	36	28	35	30	9	7	147
	0.69	12.41	9.66	12.07	10.34	3.10	2.41	50.69
	1.36	24.49	19.05	23.81	20.41	6.12	4.76	
	40.00	38.30	50.00	56.45	68.18	47.37	70.00	
Own Generators main	1	7	9	5	5	2	2	31
	0.34	2.41	3.10	1.72	1.72	0.69	0.69	10.69
	3.23	22.58	29.03	16.13	16.13	6.45	6.45	
	20.00	7.45	16.07	8.06	11.36	10.53	20.00	
Own Generators only	0	2	1	4	3	2	0	12
	0.00	0.69	0.34	1.38	1.03	0.69	0.00	4.14
	0.00	16.67	8.33	33.33	25.00	16.67	0.00	
	0.00	2.13	1.79	6.45	6.82	10.53	0.00	
Total	5	94	56	62	44	19	10	290
	1.72	32.41	19.31	21.38	15.17	6.55	3.45	100.00

Table C3. Distribution of Manufacturing Establishments Power Outage by Employment Size, Indonesia

OUTAGE (AVERAGE NO. OF OUTAGES per YEAR) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
0-6 / year	3	15	7	17	5	8	1	56
	1.03	5.17	2.41	5.86	1.72	2.76	0.34	19.31
	5.36	26.79	12.50	30.36	8.93	14.29	1.79	
	60.00	15.96	12.50	27.42	11.36	42.11	10.00	
7-12 / year	0	18	15	9	11	2	4	59
	0.00	6.21	5.17	3.10	3.79	0.69	1.38	20.34
	0.00	30.51	25.42	15.25	18.64	3.39	6.78	
	0.00	19.15	26.79	14.52	25.00	10.53	40.00	
13-24 / year	0	28	10	15	9	3	1	66
	0.00	9.66	3.45	5.17	3.10	1.03	0.34	22.76
	0.00	42.42	15.15	22.73	13.64	4.55	1.52	
	0.00	29.79	17.86	24.19	20.45	15.79	10.00	
25-48 / year	2	30	14	10	11	3	4	74
	0.69	10.34	4.83	3.45	3.79	1.03	1.38	25.52
	2.70	40.54	18.92	13.51	14.86	4.05	5.41	
	40.00	31.91	25.00	16.13	25.00	15.79	40.00	
49 & more / year	0	3	10	10	8	3	0	34
	0.00	1.03	3.45	3.45	2.76	1.03	0.00	11.72
	0.00	8.82	29.41	29.41	23.53	8.82	0.00	
	0.00	3.19	17.86	16.13	18.18	15.79	0.00	
N/A	0	0	0	1	0	0	0	1
	0.00	0.00	0.00	0.34	0.00	0.00	0.00	0.34
	0.00	0.00	0.00	100.00	0.00	0.00	0.00	
	0.00	0.00	0.00	1.61	0.00	0.00	0.00	
Total	5	94	56	62	44	19	10	290
	1.72	32.41	19.31	21.38	15.17	6.55	3.45	100.00

Table C4. Distribution of Manufacturing Establishments Boreholes by Employment Size, Indonesia

BOREHOLE (OWN BOREHOLES FOR PRODUCTION) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
YES	1	48	32	43	29	13	8	174
	0.34	16.55	11.03	14.83	10.00	4.48	2.76	60.00
	0.57	27.59	18.39	24.71	16.67	7.47	4.60	
	20.00	51.06	57.14	69.35	65.91	68.42	80.00	
NO	3	43	22	19	15	6	2	110
	1.03	14.83	7.59	6.55	5.17	2.07	0.69	37.93
	2.73	39.09	20.00	17.27	13.64	5.45	1.82	
	60.00	45.74	39.29	30.65	34.09	31.58	20.00	
N/A	1	3	2	0	0	0	0	6
	0.34	1.03	0.69	0.00	0.00	0.00	0.00	2.07
	16.67	50.00	33.33	0.00	0.00	0.00	0.00	
	20.00	3.19	3.57	0.00	0.00	0.00	0.00	
Total	5	94	56	62	44	19	10	290
	1.72	32.41	19.31	21.38	15.17	6.55	3.45	100.00

Table C5. Distribution of Manufacturing Establishments Vehicles for Shipment by Employment Size, Indonesia

VEHICLES (OWN VEHICLES FOR SHIPMENT) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
YES	2	67	39	48	29	11	6	202
	0.69	23.10	13.45	16.55	10.00	3.79	2.07	69.66
	0.99	33.17	19.31	23.76	14.36	5.45	2.97	
	40.00	71.28	69.64	77.42	65.91	57.89	60.00	
NO	3	27	17	14	15	8	4	88
	1.03	9.31	5.86	4.83	5.17	2.76	1.38	30.34
	3.41	30.68	19.32	15.91	17.05	9.09	4.55	
	60.00	28.72	30.36	22.58	34.09	42.11	40.00	
Total	5	94	56	62	44	19	10	290
	1.72	32.41	19.31	21.38	15.17	6.55	3.45	100.00

Table C6. Distribution of Manufacturing Establishments Vehicles for Workers by Employment Size, Indonesia

VEHICLEV (OWN VEHICLES FOR WORKERS) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
YES	1	10	14	29	23	12	5	94
	0.34	3.45	4.83	10.00	7.93	4.14	1.72	32.41
	1.06	10.64	14.89	30.85	24.47	12.77	5.32	
	20.00	10.64	25.00	46.77	52.27	63.16	50.00	
NO	4	84	42	33	21	7	5	196
	1.38	28.97	14.48	11.38	7.24	2.41	1.72	67.59
	2.04	42.86	21.43	16.84	10.71	3.57	2.55	
	80.00	89.36	75.00	53.23	47.73	36.84	50.00	
Total	5	94	56	62	44	19	10	290
	1.72	32.41	19.31	21.38	15.17	6.55	3.45	100.00

Table C7. Distribution of Manufacturing Establishments Motorcycles by Employment Size, Indonesia

MOTORCYC (OWN MOTORCYCLES FOR MESSENGER) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
YES	1	22	14	14	14	4	4	73
	0.34	7.59	4.83	4.83	4.83	1.38	1.38	25.17
	1.37	30.14	19.18	19.18	19.18	5.48	5.48	
	20.00	23.40	25.00	22.58	31.82	21.05	40.00	
NO	4	72	42	48	30	15	6	217
	1.38	24.83	14.48	16.55	10.34	5.17	2.07	74.83
	1.84	33.18	19.35	22.12	13.82	6.91	2.76	
	80.00	76.60	75.00	77.42	68.18	78.95	60.00	
Total	5	94	56	62	44	19	10	290
	1.72	32.41	19.31	21.38	15.17	6.55	3.45	100.00

Table C8. Distribution of Manufacturing Establishments Radio Equipment by Employment Size, Indonesia

RADIO (OWN RADIO EQUIP) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
YES	1	4	4	9	10	3	4	35
	0.34	1.38	1.38	3.10	3.45	1.03	1.38	12.07
	2.86	11.43	11.43	25.71	28.57	8.57	11.43	
	20.00	4.26	7.14	14.52	22.73	15.79	40.00	
NO	4	90	52	53	34	16	6	255
	1.38	31.03	17.93	18.28	11.72	5.52	2.07	87.93
	1.57	35.29	20.39	20.78	13.33	6.27	2.35	
	80.00	95.74	92.86	85.48	77.27	84.21	60.00	
Total	5	94	56	62	44	19	10	290
	1.72	32.41	19.31	21.38	15.17	6.55	3.45	100.00

Table C9. Distribution of Manufacturing Establishments Vehicles for Garbage Disposal by Employment Size, Indonesia

VEHICLEG (OWN VEHICLES FOR GARBAGE) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
YES	0	1	0	3	6	1	0	11
	0.00	0.34	0.00	1.03	2.07	0.34	0.00	3.79
	0.00	9.09	0.00	27.27	54.55	9.09	0.00	
	0.00	1.06	0.00	4.84	13.64	5.26	0.00	
NO	5	93	56	59	38	18	10	279
	1.72	32.07	19.31	20.34	13.10	6.21	3.45	96.21
	1.79	33.33	20.07	21.15	13.62	6.45	3.58	
	100.00	98.94	100.00	95.16	86.36	94.74	100.00	
Total	5	94	56	62	44	19	10	290
	1.72	32.41	19.31	21.38	15.17	6.55	3.45	100.00

Table C10. Distribution of Manufacturing Establishments Use of Overtime Labor due to Power Outages by Employment Size, Indonesia

OVERTIME (OVERTIME LABOR) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
USED	2	39	24	21	13	8	5	112
	0.69	13.45	8.28	7.24	4.48	2.76	1.72	38.62
	1.79	34.82	21.43	18.75	11.61	7.14	4.46	
	40.00	41.49	42.86	33.87	29.55	42.11	50.00	
DID NOT USE	3	53	30	37	26	7	5	161
	1.03	18.28	10.34	12.76	8.97	2.41	1.72	55.52
	1.86	32.92	18.63	22.98	16.15	4.35	3.11	
	60.00	56.38	53.57	59.68	59.09	36.84	50.00	
N/A	0	2	2	4	4	4	0	16
	0.00	0.69	0.69	1.38	1.38	1.38	0.00	5.52
	0.00	12.50	12.50	25.00	25.00	25.00	0.00	
	0.00	2.13	3.57	6.45	9.09	21.05	0.00	
don't know	0	0	0	0	1	0	0	1
	0.00	0.00	0.00	0.00	0.34	0.00	0.00	0.34
	0.00	0.00	0.00	0.00	100.00	0.00	0.00	
	0.00	0.00	0.00	0.00	2.27	0.00	0.00	
Total	5	94	56	62	44	19	10	290
	1.72	32.41	19.31	21.38	15.17	6.55	3.45	100.00

Table C11. Percent of Production Hours Lost due to Power Interruption by Region and Employment Size, Indonesia

Power Interruption			Loss (%)
Whole Country	ALL	MEAN	6.92
		N	191.00
	Small (LT 50)	MEAN	5.93
		N	70.00
	Large (GE 50)	MEAN	7.49
		N	121.00
Jakarta	ALL	MEAN	6.58
		N	95.00
	Small (LT 50)	MEAN	5.49
		N	37.00
	Large (GE 50)	MEAN	7.28
		N	58.00
Botabek	ALL	MEAN	7.65
		N	71.00
	Small (LT 50)	MEAN	7.92
		N	24.00
	Large (GE 50)	MEAN	7.51
		N	47.00
Semarang	ALL	MEAN	6.12
		N	25.00
	Small (LT 50)	MEAN	2.44
		N	9.00
	Large (GE 50)	MEAN	8.19
		N	16.00

Table D1. Distribution of Manufacturing Establishments by Region and Source of Electricity, Thailand

REGION	ELECTRIC (SOURCE OF ELECTRICITY)			
Frequency Percent Row Pct Col Pct	Public only	Public main	Own Gen. main	Total
Bangkok	140 46.67 95.89 49.65	6 2.00 4.11 37.50	0 0.00 0.00 0.00	146 48.67
Metropolitan	96 32.00 92.31 34.04	8 2.67 7.69 50.00	0 0.00 0.00 0.00	104 34.67
North	46 15.33 92.00 16.31	2 0.67 4.00 12.50	2 0.67 4.00 100.00	50 16.67
Total	282 94.00	16 5.33	2 0.67	300 100.00

Table D2. Distribution of Manufacturing Establishments by Source of Electricity and Employment Size, Thailand

ELECTRIC (SOURCE OF ELECTRICITY) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
Public only	33 11.00 11.70 100.00	72 24.00 25.53 97.30	67 22.33 23.76 98.53	53 17.67 18.79 98.15	39 13.00 13.83 82.98	13 4.33 4.61 81.25	5 1.67 1.77 62.50	282 94.00
Public main	0 0.00 0.00 0.00	1 0.33 6.25 1.35	1 0.33 6.25 1.47	1 0.33 6.25 1.85	7 2.33 43.75 14.89	3 1.00 18.75 18.75	3 1.00 18.75 37.50	16 5.33
Own Generators main	0 0.00 0.00 0.00	1 0.33 50.00 1.35	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.33 50.00 2.13	0 0.00 0.00 0.00	0 0.00 0.00 0.00	2 0.67
Total	33 11.00	74 24.67	68 22.67	54 18.00	47 15.67	16 5.33	8 2.67	300 100.00

Table D3. Distribution of Manufacturing Establishments Power Outage by Employment Size, Thailand

OUTAGE (AVERAGE NO. OF OUTAGES per YEAR) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
0-6 / year	22 7.33 12.64 66.67	47 15.67 27.01 63.51	47 15.67 27.01 69.12	33 11.00 18.97 61.11	16 5.33 9.20 34.04	7 2.33 4.02 43.75	2 0.67 1.15 25.00	174 58.00
7-12 / year	5 1.67 6.41 15.15	20 6.67 25.64 27.03	16 5.33 20.51 23.53	15 5.00 19.23 27.78	15 5.00 19.23 31.91	3 1.00 3.85 18.75	4 1.33 5.13 50.00	78 26.00
13-24 / year	3 1.00 10.34 9.09	5 1.67 17.24 6.76	4 1.33 13.79 5.88	4 1.33 13.79 7.41	9 3.00 31.03 19.15	4 1.33 13.79 25.00	0 0.00 0.00 0.00	29 9.67
25-48 / year	2 0.67 11.76 6.06	2 0.67 11.76 2.70	1 0.33 5.88 1.47	2 0.67 11.76 3.70	6 2.00 35.29 12.77	2 0.67 11.76 12.50	2 0.67 11.76 25.00	17 5.67
49 & more / year	1 0.33 50.00 3.03	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	1 0.33 50.00 2.13	0 0.00 0.00 0.00	0 0.00 0.00 0.00	2 0.67
Total	33 11.00	74 24.67	68 22.67	54 18.00	47 15.67	16 5.33	8 2.67	300 100.00

Table D4. Distribution of Manufacturing Establishments Boreholes by Employment Size, Thailand

BOREHOLE (OWN BOREHOLES FOR PRODUCTION) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
YES	4	13	12	16	17	7	4	73
	1.33	4.33	4.00	5.33	5.67	2.33	1.33	24.33
	5.48	17.81	16.44	21.92	23.29	9.59	5.48	
	12.12	17.57	17.65	29.63	36.17	43.75	50.00	
NO	29	61	56	38	30	9	4	227
	9.67	20.33	18.67	12.67	10.00	3.00	1.33	75.67
	12.78	26.87	24.67	16.74	13.22	3.96	1.76	
	87.88	82.43	82.35	70.37	63.83	56.25	50.00	
Total	33	74	68	54	47	16	8	300
	11.00	24.67	22.67	18.00	15.67	5.33	2.67	100.00

Table D5. Distribution of Manufacturing Establishments Vehicles for Shipment by Employment Size, Thailand

VEHICLES (OWN VEHICLES FOR SHIPMENT) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
YES	24 8.00 9.84 72.73	64 21.33 26.23 86.49	61 20.33 25.00 89.71	41 13.67 16.80 75.93	36 12.00 14.75 76.60	13 4.33 5.33 81.25	5 1.67 2.05 62.50	244 81.33
NO	9 3.00 16.07 27.27	10 3.33 17.86 13.51	7 2.33 12.50 10.29	13 4.33 23.21 24.07	11 3.67 19.64 23.40	3 1.00 5.36 18.75	3 1.00 5.36 37.50	56 18.67
Total	33 11.00	74 24.67	68 22.67	54 18.00	47 15.67	16 5.33	8 2.67	300 100.00

Table D6. Distribution of Manufacturing Establishments Vehicles for Workers by Employment Size, Thailand

VEHICLEW (OWN VEHICLES FOR WORKERS) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
YES	1	0	2	8	8	8	2	29
	0.33	0.00	0.67	2.67	2.67	2.67	0.67	9.67
	3.45	0.00	6.90	27.59	27.59	27.59	6.90	
	3.03	0.00	2.94	14.81	17.02	50.00	25.00	
NO	32	74	66	46	39	8	6	271
	10.67	24.67	22.00	15.33	13.00	2.67	2.00	90.33
	11.81	27.31	24.35	16.97	14.39	2.95	2.21	
	96.97	100.00	97.06	85.19	82.98	50.00	75.00	
Total	33	74	68	54	47	16	8	300
	11.00	24.67	22.67	18.00	15.67	5.33	2.67	100.00

Table D7. Distribution of Manufacturing Establishments Motorcycles by Employment Size, Thailand

MOTORCYC (OWN MOTORCYCLES FOR MESSENGER) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
YES	3	7	19	18	18	3	5	73
	1.00	2.33	6.33	6.00	6.00	1.00	1.67	24.33
	4.11	9.59	26.03	24.66	24.66	4.11	6.85	
	9.09	9.46	27.94	33.33	38.30	18.75	62.50	
NO	30	67	49	36	29	13	3	227
	10.00	22.33	16.33	12.00	9.67	4.33	1.00	75.67
	13.22	29.52	21.59	15.86	12.78	5.73	1.32	
	90.91	90.54	72.06	66.67	61.70	81.25	37.50	
Total	33	74	68	54	47	16	8	300
	11.00	24.67	22.67	18.00	15.67	5.33	2.67	100.00

Table D8. Distribution of Manufacturing Establishments Radio Equipment by Employment Size, Thailand

RADIO (OWN RADIO EQUIP) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
YES	0	2	3	1	5	1	1	13
	0.00	0.67	1.00	0.33	1.67	0.33	0.33	4.33
	0.00	15.38	23.08	7.69	38.46	7.69	7.69	
	0.00	2.70	4.41	1.85	10.64	6.25	12.50	
NO	33	72	65	53	42	15	7	287
	11.00	24.00	21.67	17.67	14.00	5.00	2.33	95.67
	11.50	25.09	22.65	18.47	14.63	5.23	2.44	
	100.00	97.30	95.59	98.15	89.36	93.75	87.50	
Total	33	74	68	54	47	16	8	300
	11.00	24.67	22.67	18.00	15.67	5.33	2.67	100.00

Table D9. Distribution of Manufacturing Establishments Vehicles for Garbage Disposal by Employment Size, Thailand

VEHICLEG (OWN VEHICLES FOR GARBAGE) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
YES	0	0	1	1	0	1	0	3
	0.00	0.00	0.33	0.33	0.00	0.33	0.00	1.00
	0.00	0.00	33.33	33.33	0.00	33.33	0.00	
	0.00	0.00	1.47	1.85	0.00	6.25	0.00	
NO	33	74	67	53	47	15	8	297
	11.00	24.67	22.33	17.67	15.67	5.00	2.67	99.00
	11.11	24.92	22.56	17.85	15.82	5.05	2.69	
	100.00	100.00	98.53	98.15	100.00	93.75	100.00	
Total	33	74	68	54	47	16	8	300
	11.00	24.67	22.67	18.00	15.67	5.33	2.67	100.00

Table D10. Distribution of Manufacturing Establishments Use of Overtime Labor due to Power Outages by Employment Size, Thailand

OVERTIME (OVERTIME LABOR) FIRMSIZE (EMPLOYEES per FIRM)

Frequency Percent Row Pct Col Pct	1-19	20-49	50-99	100-199	200-499	500-999	1000 & over	Total
USED	4 1.33 6.90 12.12	6 2.00 10.34 8.11	11 3.67 18.97 16.18	13 4.33 22.41 24.07	15 5.00 25.86 31.91	7 2.33 12.07 43.75	2 0.67 3.45 25.00	58 19.33
DID NOT USE	0 0.00 0.00 0.00	1 0.33 12.50 1.35	0 0.00 0.00 0.00	3 1.00 37.50 5.56	3 1.00 37.50 6.38	1 0.33 12.50 6.25	0 0.00 0.00 0.00	8 2.67
N/A	29 9.67 12.55 87.88	66 22.00 28.57 89.19	55 18.33 23.81 80.88	38 12.67 16.45 70.37	29 9.67 12.55 61.70	8 2.67 3.46 50.00	6 2.00 2.60 75.00	231 77.00
don't know	0 0.00 0.00 0.00	1 0.33 33.33 1.35	2 0.67 66.67 2.94	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	0 0.00 0.00 0.00	3 1.00
Total	33 11.00	74 24.67	68 22.67	54 18.00	47 15.67	16 5.33	8 2.67	300 100.00

Table D11. Percent of Production Hours Lost due to Power Interruption by Region and Employment Size, Thailand

Power Interruption			Loss (%)
Whole Country	ALL	MEAN	5.83
		N	127.00
	Small (LT 50)	MEAN	6.42
		N	38.00
	Large (GE 50)	MEAN	5.57
		N	89.00
Bangkok	ALL	MEAN	4.47
		N	40.00
	Small (LT 50)	MEAN	2.64
		N	14.00
	Large (GE 50)	MEAN	5.46
		N	26.00
Metro-politan	ALL	MEAN	4.00
		N	45.00
	Small (LT 50)	MEAN	1.00
		N	3.00
	Large (GE 50)	MEAN	4.21
		N	42.00
North	ALL	MEAN	9.07
		N	42.00
	Small (LT 50)	MEAN	9.71
		N	21.00
	Large (GE 50)	MEAN	8.43
		N	21.00

Table E1. **Capital Cost of Private Power Generation, Nigeria**
- Average Current Market Value in 1000 Naira -

Capital Cost - Private Power Generation			Number of Firms	(A) Generators	(B) Other Facilities	(C) Machinery & Equipment	(D) (A+B)/C (percent)
0. Five States	All	MEAN	149.00	801.48	118.53	9239.62	9.96
	Small (LT 50)	MEAN	34.00	207.44	15.44	1008.35	22.10
	Large (GE 50)	MEAN	115.00	977.11	149.01	11673.21	9.65
1. LAGOS	All	MEAN	70.00	915.07	170.26	9520.84	11.40
	Small (LT 50)	MEAN	14.00	196.36	12.93	831.79	25.16
	Large (GE 50)	MEAN	56.00	1094.75	209.59	11693.11	11.15
2. ANAMBRA	All	MEAN	12.00	695.75	82.83	10604.83	7.34
	Small (LT 50)	MEAN	7.00	219.29	15.00	842.86	27.80
	Large (GE 50)	MEAN	5.00	1362.80	177.80	24271.60	6.35
3. IMO	All	MEAN	10.00	547.50	103.40	14490.80	4.49
	Small (LT 50)	MEAN	1.00	120.00	3.00	400.00	30.75
	Large (GE 50)	MEAN	9.00	595.00	114.56	16056.44	4.42
4. KADUNA	All	MEAN	26.00	1010.31	82.08	8176.31	13.36
	Small (LT 50)	MEAN	4.00	326.00	42.50	1261.50	29.21
	Large (GE 50)	MEAN	22.00	1134.73	89.27	9433.55	12.97
5. KANO	All	MEAN	31.00	492.71	51.00	7274.00	7.47
	Small (LT 50)	MEAN	8.00	168.12	8.25	1411.63	12.49
	Large (GE 50)	MEAN	23.00	605.61	65.87	9313.09	7.21

Table E2. Capital Cost of Private Water Supply, Nigeria - Average Current Market Value in 1000 Naira -

Capital Cost - Private Water Supply			Number of Firms	(A) Boreholes	(B) Other Facilities	(C) Machinery & Equipment	(D) (A+B)/C (percent)
0. Five States	All	MEAN	70.00	144.57	116.84	13675.60	1.91
	Small (LT 50)	MEAN	4.00	22.50	9.25	1130.50	2.81
	Large (GE 50)	MEAN	66.00	151.97	123.36	14435.91	1.91
1. LAGOS	All	MEAN	54.00	146.93	98.96	11792.80	2.09
	Small (LT 50)	MEAN	4.00	22.50	9.25	1130.50	2.81
	Large (GE 50)	MEAN	50.00	156.88	106.14	12645.78	2.08
2. ANAMBRA	All	MEAN	2.00	428.00	180.00	2850.00	21.33
	Large (GE 50)	MEAN	2.00	428.00	180.00	2850.00	21.33
3. IMO	All	MEAN	5.00	117.00	363.80	25529.00	1.88
	Large (GE 50)	MEAN	5.00	117.00	363.80	25529.00	1.88
4. KADUNA	All	MEAN	3.00	103.33	133.00	15038.33	1.57
	Large (GE 50)	MEAN	3.00	103.33	133.00	15038.33	1.57
5. KANO	All	MEAN	6.00	72.50	42.83	23670.17	0.49
	Large (GE 50)	MEAN	6.00	72.50	42.83	23670.17	0.49

Table E3. Capital Cost of Private Transportation for Shipment for Goods, Nigeria - Average Current Market Value in 1000 Naira -

Capital Cost - Private Transportaion for Shipment			Number of Firms	(A) Vehicles for Shipment	(B) All Vehicles	(C) Machinery & Equipment	(D) A/B (percent)	(E) A/C (percent)
0. Five States	All	MEAN	111.00	386.37	474.02	8368.68	81.51	4.62
	Small (LT 50)	MEAN	28.00	82.14	87.50	750.11	93.88	10.95
	Large (GE 50)	MEAN	83.00	489.00	604.41	10938.80	80.91	4.47
1. LAGOS	All	MEAN	52.00	407.19	558.27	10286.63	72.94	3.96
	Small (LT 50)	MEAN	10.00	60.50	60.50	928.70	100.00	6.51
	Large (GE 50)	MEAN	42.00	489.74	676.79	12514.71	72.36	3.91
2. ANAMBRA	All	MEAN	14.00	150.57	161.29	757.50	93.36	19.88
	Small (LT 50)	MEAN	12.00	89.17	101.67	328.08	87.70	27.18
	Large (GE 50)	MEAN	2.00	519.00	519.00	3334.00	100.00	15.57
3. IMO	All	MEAN	7.00	1144.00	1251.14	18203.57	91.44	6.28
	Large (GE 50)	MEAN	7.00	1144.00	1251.14	18203.57	91.44	6.28
4. KADUNA	All	MEAN	19.00	385.58	404.26	5242.68	95.38	7.35
	Small (LT 50)	MEAN	3.00	50.00	50.00	1172.33	100.00	4.26
	Large (GE 50)	MEAN	16.00	448.50	470.69	6005.88	95.29	7.47
5. KANO	All	MEAN	19.00	224.79	257.32	8230.37	87.36	2.73
	Small (LT 50)	MEAN	3.00	158.33	158.33	1420.67	100.00	11.15
	Large (GE 50)	MEAN	16.00	237.25	275.87	9507.19	86.00	2.50

Table E4. Capital Cost of Private Transportation for Workers, Nigeria - Average Current Market Value in 1000 Naira -

Capital Cost - Private Transportation for Workers			Number of Firms	(A) Vehicles for Workers	(B) All Vehicles	(C) Machinery & Equipment	(D) A/B (percent)	(E) A/C (percent)
0. Five States	All	MEAN	24.00	409.62	1052.88	14309.21	38.91	2.86
	Small (LT 50)	MEAN	3.00	63.33	113.33	1135.00	55.88	5.58
	Large (GE 50)	MEAN	21.00	459.10	1187.10	16191.24	38.67	2.84
1. LAGOS	All	MEAN	10.00	787.10	1509.70	29086.90	52.14	2.71
	Large (GE 50)	MEAN	10.00	787.10	1509.70	29086.90	52.14	2.71
2. ANAMBRA	All	MEAN	1.00	150.00	300.00	505.00	50.00	29.70
	Small (LT 50)	MEAN	1.00	150.00	300.00	505.00	50.00	29.70
3. IMO	All	MEAN	6.00	169.17	1393.33	2547.17	12.14	6.64
	Small (LT 50)	MEAN	1.00	25.00	25.00	400.00	100.00	6.25
	Large (GE 50)	MEAN	5.00	198.00	1667.00	2976.60	11.88	6.65
4. KADUNA	All	MEAN	2.00	115.00	348.50	3017.00	33.00	3.81
	Large (GE 50)	MEAN	2.00	115.00	348.50	3017.00	33.00	3.81
5. KANO	All	MEAN	5.00	113.00	163.00	6146.00	69.33	1.84
	Small (LT 50)	MEAN	1.00	15.00	15.00	2500.00	100.00	0.60
	Large (GE 50)	MEAN	4.00	137.50	200.00	7057.50	68.75	1.95

Table E5. Capital Cost of Motorcycles for Communication, Nigeria - Average Current Market Value in 1000 Naira -

Capital Cost - Motorcycle for Communication			Number of Firms	(A) Motorcycles for Messengers	(B) All Vehicles	(C) Machinery & Equipment	(D) A/B (percent)	(E) A/C (percent)
0. Five States	All	MEAN	54.00	7.05	596.43	15848.69	1.18	0.04
	Small (LT 50)	MEAN	3.00	8.58	131.67	1765.00	6.52	0.49
	Large (GE 50)	MEAN	51.00	6.96	623.76	16677.14	1.12	0.04
1. LAGOS	All	MEAN	35.00	8.48	763.77	13248.37	1.11	0.06
	Small (LT 50)	MEAN	2.00	9.88	80.00	1325.00	12.34	0.75
	Large (GE 50)	MEAN	33.00	8.39	805.21	13971.00	1.04	0.06
2. ANAMBRA	All	MEAN	3.00	2.70	316.67	37796.67	0.85	0.01
	Large (GE 50)	MEAN	3.00	2.70	316.67	37796.67	0.85	0.01
3. IMO	All	MEAN	3.00	3.57	234.33	32048.67	1.52	0.01
	Large (GE 50)	MEAN	3.00	3.57	234.33	32048.67	1.52	0.01
4. KADUNA	All	MEAN	1.00	0.01	1188.00	1296.00	0.00	0.00
	Large (GE 50)	MEAN	1.00	0.01	1188.00	1296.00	0.00	0.00
5. KANO	All	MEAN	12.00	5.43	219.50	15108.67	2.48	0.04
	Small (LT 50)	MEAN	1.00	6.00	235.00	2645.00	2.55	0.23
	Large (GE 50)	MEAN	11.00	5.38	218.09	16241.73	2.47	0.03

Table E6. Capital Cost of Private Communication (Radio-Equipment), Nigeria - Average Current Market Value in 1000 Naira -

Capital Cost - Private Communication (Radio equipment)			Number of Firms	(A) Radio-Equipment	(B) Machinery & Equipment	(C) A/B (percent)
0. Five States	All	MEAN	66.00	84.15	14296.02	0.59
	Small (LT 50)	MEAN	2.00	19.00	1283.00	1.48
	Large (GE 50)	MEAN	64.00	86.19	14702.67	0.59
1. LAGOS	All	MEAN	33.00	118.00	14063.12	0.84
	Large (GE 50)	MEAN	33.00	118.00	14063.12	0.84
2. ANAMBRA	All	MEAN	4.00	40.75	29222.50	0.14
	Large (GE 50)	MEAN	4.00	40.75	29222.50	0.14
3. IMO	All	MEAN	6.00	104.33	7241.00	1.44
	Large (GE 50)	MEAN	6.00	104.33	7241.00	1.44
4. KADUNA	All	MEAN	13.00	37.77	13918.31	0.27
	Small (LT 50)	MEAN	1.00	30.00	1529.00	1.96
	Large (GE 50)	MEAN	12.00	38.42	14950.75	0.26
5. KANO	All	MEAN	10.00	38.00	13818.00	0.28
	Small (LT 50)	MEAN	1.00	8.00	1037.00	0.77
	Large (GE 50)	MEAN	9.00	41.33	15238.11	0.27

Table E7. Capital Cost of Private Transportation for Garbage Disposal, Nigeria - Average Current Market Value in 1000 Naira -

Capital Cost - Private Transportation for Garbage Disposal			Number of Firms	(A) Vehicles for Garbage	(B) All Vehicles	(C) Machinery & Equipment	(D) A/B (percent)	(E) A/C (percent)
0. Five States	All	MEAN	25.00	64.72	234.40	13411.00	27.61	0.48
	Small (LT 50)	MEAN	1.00	2.00	2.00	1300.00	100.00	0.15
	Large (GE 50)	MEAN	24.00	67.33	244.08	13915.62	27.59	0.48
1. LAGOS	All	MEAN	6.00	98.33	174.67	6403.83	56.30	1.54
	Large (GE 50)	MEAN	6.00	98.33	174.67	6403.83	56.30	1.54
2. ANAMBRA	All	MEAN	4.00	73.00	73.00	28997.50	100.00	0.25
	Small (LT 50)	MEAN	1.00	2.00	2.00	1300.00	100.00	0.15
	Large (GE 50)	MEAN	3.00	96.67	96.67	38230.00	100.00	0.25
4. KADUNA	All	MEAN	4.00	71.00	535.50	26902.00	13.26	0.26
	Large (GE 50)	MEAN	4.00	71.00	535.50	26902.00	13.26	0.26
5. KANO	All	MEAN	11.00	41.09	216.18	6659.45	19.01	0.62
	Large (GE 50)	MEAN	11.00	41.09	216.18	6659.45	19.01	0.62

Table E8. Capital Cost of Total Private Infrastructures, Nigeria - Average Current Market Value in 1000 Naira -

Capital Cost - Total Private Infrastructure			Number of Firms	(A) Total Private Infrastructures	(B) Total Capital Stock	(C) A/B (percent)
0. Whole Country	All	MEAN	174.00	1290.28	9436.84	13.67
	Small (LT 50)	MEAN	46.00	253.04	829.10	30.52
	Large (GE 50)	MEAN	128.00	1663.04	12530.24	13.27
1. LAGOS	All	MEAN	81.00	1576.44	9736.85	16.19
	Small (LT 50)	MEAN	17.00	255.99	739.34	34.62
	Large (GE 50)	MEAN	64.00	1927.19	12126.82	15.89
2. ANAMBRA	All	MEAN	22.00	701.14	5979.69	11.73
	Small (LT 50)	MEAN	16.00	218.37	509.94	42.82
	Large (GE 50)	MEAN	6.00	1988.52	20565.69	9.67
3. IMO	All	MEAN	10.00	1860.77	15394.37	12.09
	Small (LT 50)	MEAN	1.00	148.00	425.00	34.82
	Large (GE 50)	MEAN	9.00	2051.08	17057.63	12.02
4. KADUNA	All	MEAN	28.00	1395.64	10446.07	13.36
	Small (LT 50)	MEAN	4.00	413.50	1299.00	31.83
	Large (GE 50)	MEAN	24.00	1559.33	11970.58	13.03
5. KANO	All	MEAN	33.00	718.37	8343.58	8.61
	Small (LT 50)	MEAN	8.00	249.00	1473.75	16.90
	Large (GE 50)	MEAN	25.00	868.57	10541.93	8.24

Table E9. Average Cost of Own Water Supply by Size of Own Water Production, Nigeria

(Naira per Gallon)

Own Water Production (1000 gallons)			Fixed Cost a/	Variable Cost b/	Total Cost
FIVE STATES	ALL	MEAN	0.0603	0.3297	0.3900
		N	73.0000	73.0000	73.0000
	1 - 99	MEAN	0.2960	2.4064	2.7024
		N	6.0000	6.0000	6.0000
	100 - 499	MEAN	0.0843	0.2402	0.3245
		N	19.0000	19.0000	19.0000
	500 - 999	MEAN	0.0456	0.3131	0.3588
		N	10.0000	10.0000	10.0000
	1000-4999	MEAN	0.0244	0.0866	0.1110
		N	20.0000	20.0000	20.0000
	5000-9999	MEAN	0.0079	0.0248	0.0326
		N	7.0000	7.0000	7.0000
	10000-over	MEAN	0.0023	0.0028	0.0051
		N	11.0000	11.0000	11.0000

a/ Annualized capital value of boreholes and accessories.

b/ Include fuel, maintenance, parts, and labor.

Table E10. Average Cost of Electric Power Generation by Size of Own Electricity Production, Nigeria

(Naira per kWh)

Own Electric Production (1000 kWh)			Fixed COST a/	Variable Cost b/	Total Cost
Five States	ALL	MEAN	1.9636	0.7879	2.7515
		N	164.0000	164.0000	164.0000
	1 - 4	MEAN	30.9301	1.8333	32.7634
		N	4.0000	4.0000	4.0000
	5 - 9	MEAN	12.0283	5.5111	17.5394
		N	5.0000	5.0000	5.0000
	10 - 19	MEAN	2.8601	1.3357	4.1958
		N	12.0000	12.0000	12.0000
	20 - 49	MEAN	1.3547	0.8652	2.2199
		N	22.0000	22.0000	22.0000
	50 - 99	MEAN	1.1559	0.9458	2.1017
		N	32.0000	32.0000	32.0000
	100-199	MEAN	0.5608	0.4806	1.0414
		N	22.0000	22.0000	22.0000
	200-499	MEAN	0.4524	0.2826	0.7349
		N	34.0000	34.0000	34.0000
	500-999	MEAN	0.3480	0.3440	0.6920
		N	21.0000	21.0000	21.0000
	1000-1999	MEAN	0.1914	0.0935	0.2850
		N	6.0000	6.0000	6.0000
	2000-over	MEAN	0.1480	0.1720	0.3200
		N	6.0000	6.0000	6.0000

a/ Annualized capital value of generators and accessories.

b/ Include fuel, maintenance, parts, and labor.

Table F1. Capital Cost of Private Power Generation, Indonesia - Average Current Market Value in 1000 Rupiah -

Capital Cost - Private Power Generation			Number of Firms	(A) Generators	(B) Other Facilities	(C) Machinery & Equipment	(D) (A+B)/C (percent)
Three Regions	All	MEAN	190.00	206538.19	268137.95	3539023.35	13.41
	Small (LT 50)	MEAN	46.00	19376.09	26389.13	561995.35	8.14
	Large (GE 50)	MEAN	144.00	266326.08	345363.26	4490018.40	13.62
Jakarta	All	MEAN	82.00	76470.07	98515.44	3094565.68	5.65
	Small (LT 50)	MEAN	25.00	14964.00	17718.00	661005.24	4.94
	Large (GE 50)	MEAN	57.00	103446.42	133952.91	4161916.75	5.70
Botabek	All	MEAN	76.00	391978.42	506337.25	4887251.95	18.38
	Small (LT 50)	MEAN	15.00	20480.00	29383.33	124979.27	39.90
	Large (GE 50)	MEAN	61.00	483330.49	623621.00	6058302.61	18.27
Semarang	All	MEAN	32.00	99417.19	137072.28	1475903.19	16.02
	Small (LT 50)	MEAN	6.00	35000.00	55033.33	1241994.33	7.25
	Large (GE 50)	MEAN	26.00	114282.69	156004.35	1529882.15	17.67

Table F2. Capital Cost of Private Water Supply, Indonesia - Average Current Market Value in 1000 Rupiah -

Capital Cost - Private Water Supply			Number of Firms	(A) Boreholes	(B) Other Facilities	(C) Machinery & Equipment	(D) (A+B)/C (percent)
Three Regions	All	MEAN	172.00	6210.77	4468.26	2444090.07	0.44
	Small (LT 50)	MEAN	49.00	2045.51	2483.90	496271.22	0.91
	Large (GE 50)	MEAN	123.00	7870.10	5258.77	3220050.42	0.41
Jakarta	All	MEAN	62.00	8802.42	6070.47	4142922.32	0.36
	Small (LT 50)	MEAN	23.00	2628.26	2797.61	682749.13	0.79
	Large (GE 50)	MEAN	39.00	12443.59	8000.62	6183537.28	0.33
Botabek	All	MEAN	81.00	4117.80	3347.27	1480244.85	0.50
	Small (LT 50)	MEAN	20.00	629.00	894.55	67229.45	2.27
	Large (GE 50)	MEAN	61.00	5261.67	4151.44	1943528.59	0.48
Semarang	All	MEAN	29.00	6515.86	4173.86	1504223.28	0.71
	Small (LT 50)	MEAN	6.00	4533.33	6579.17	1211578.50	0.92
	Large (GE 50)	MEAN	23.00	7033.04	3546.39	1580565.39	0.67

Table F3. Capital Cost of Private Transportation for Shipment, Indonesia - Average Current Market Value in 1000 Rupiah -

Capital Cost - Private Transportation for Shipment			Number of Firms	(A) Vehicles for Shipment	(B) All Vehicles	(C) Machinery & Equipment	(D) A/B (percent)	(E) A/C (percent)
Three Regions	All	MEAN	201.00	57391.56	101148.66	3156771.87	56.74	1.82
	Small (LT 50)	MEAN	69.00	24075.99	28242.65	250016.45	85.25	9.63
	Large (GE 50)	MEAN	132.00	74806.52	139258.61	4676212.20	53.72	1.60
Jakarta	All	MEAN	95.00	58938.23	99484.38	2545874.99	59.24	2.32
	Small (LT 50)	MEAN	34.00	20654.21	21624.79	78409.03	95.51	26.34
	Large (GE 50)	MEAN	61.00	80276.87	142881.52	3921183.89	56.18	2.05
Botabek	All	MEAN	80.00	53857.86	106848.64	4510276.79	50.41	1.19
	Small (LT 50)	MEAN	26.00	25115.38	27096.15	238481.23	92.69	10.53
	Large (GE 50)	MEAN	54.00	67696.83	145247.98	6567067.24	46.61	1.03
Semarang	All	MEAN	26.00	62613.19	89691.27	1224264.54	69.81	5.11
	Small (LT 50)	MEAN	9.00	34000.00	56555.56	931635.11	60.12	3.65
	Large (GE 50)	MEAN	17.00	77761.35	107233.71	1379186.00	72.52	5.64

Table F4. Capital Cost of Private Transportation for Workers, Indonesia - Average Current Market Value in 1000 Rupiah -

Capital Cost - Private Transportation for Workers			Number of Firms	(A) Vehicles for Workers	(B) All Vehicles	(C) Machinery & Equipment	(D) A/B (percent)	(E) A/C (percent)
Three Regions	All	MEAN	94.00	148828.12	213755.26	6347361.39	69.63	2.34
	Small (LT 50)	MEAN	11.00	33727.27	48727.27	1952187.55	69.22	1.73
	Large (GE 50)	MEAN	83.00	164082.45	235626.43	6929854.31	69.64	2.37
Jakarta	All	MEAN	35.00	136101.40	215475.09	6437745.69	63.16	2.11
	Small (LT 50)	MEAN	5.00	12000.00	23200.00	2875906.00	51.72	0.42
	Large (GE 50)	MEAN	30.00	156784.97	247520.93	7031385.63	63.34	2.23
Botabek	All	MEAN	42.00	189001.52	248623.64	7984144.69	76.02	2.37
	Small (LT 50)	MEAN	3.00	30666.67	35333.33	244831.67	86.79	12.53
	Large (GE 50)	MEAN	39.00	201181.13	265030.59	8579476.46	75.91	2.34
Semarang	All	MEAN	17.00	75778.24	124069.00	2117458.53	61.08	3.58
	Small (LT 50)	MEAN	3.00	73000.00	104666.67	2120012.67	69.75	3.44
	Large (GE 50)	MEAN	14.00	76373.57	128226.64	2116911.21	59.56	3.61

Table F5. Capital Cost of Motorcycles for Communication, Indonesia - Average Current Market Value in 1000 Rupiah -

Capital Cost - Motorcycle for Communication			Number of Firms	(A) Motorcycles for Messengers	(B) All Vehicles	(C) Machinery & Equipment	(D) A/B (percent)	(E) A/C (percent)
Three Regions	All	MEAN	64.00	3443.05	133136.63	3940560.36	2.59	0.09
	Small (LT 50)	MEAN	21.00	2169.05	22777.05	112536.57	9.52	1.93
	Large (GE 50)	MEAN	43.00	4065.23	187033.16	5810060.35	2.17	0.07
Jakarta	All	MEAN	34.00	4625.88	142013.76	5964286.47	3.26	0.08
	Small (LT 50)	MEAN	11.00	2700.00	21210.73	98713.73	12.73	2.74
	Large (GE 50)	MEAN	23.00	5546.96	199789.13	8769560.39	2.78	0.06
Botabek	All	MEAN	20.00	2485.00	153762.30	2336699.10	1.62	0.11
	Small (LT 50)	MEAN	6.00	1308.33	19833.33	105123.17	6.60	1.24
	Large (GE 50)	MEAN	14.00	2989.29	211160.43	3293088.79	1.42	0.09
Semarang	All	MEAN	10.00	1337.50	61703.00	267614.10	2.17	0.50
	Small (LT 50)	MEAN	4.00	2000.00	31500.00	161669.50	6.35	1.24
	Large (GE 50)	MEAN	6.00	895.83	81838.33	338243.83	1.09	0.26

Table F6. Capital Cost of Private Communication (Radio-Equipment), Indonesia - Average Current Market Value in 1000 Rupiah -

Capital Cost - Private Communication (Radio equipment)			Number of Firms	(A) Radio-Equipment	(B) Machinery & Equipment	(C) A/B (percent)
Three Regions	All	MEAN	35.00	2892.14	2867495.97	0.10
	Small (LT 50)	MEAN	5.00	1850.00	142250.20	1.30
	Large (GE 50)	MEAN	30.00	3065.83	3321703.60	0.09
Jakarta	All	MEAN	4.00	3062.50	389687.75	0.79
	Small (LT 50)	MEAN	2.00	2625.00	279375.50	0.94
	Large (GE 50)	MEAN	2.00	3500.00	500000.00	0.70
Botabek	All	MEAN	25.00	2953.00	2987289.48	0.10
	Small (LT 50)	MEAN	2.00	1200.00	51250.00	2.34
	Large (GE 50)	MEAN	23.00	3105.43	3242597.26	0.10
Semarang	All	MEAN	6.00	2525.00	4020228.50	0.06
	Small (LT 50)	MEAN	1.00	1600.00	50000.00	3.20
	Large (GE 50)	MEAN	5.00	2710.00	4814274.20	0.06

Table F7. Capital Cost of Private Transportation for Garbage Disposal, Indonesia - Average Current Market Value in 1000 Rupiah -

Capital Cost - Private Transportation for Garbage Disposal			Number of Firms	(A) Vehicles for Garbage	(B) All Vehicles	(C) Machinery & Equipment	(D) A/B (percent)	(E) A/C (percent)
Three Regions	All	MEAN	11.00	6181.82	229909.09	20852323.91	2.69	0.03
	Small (LT 50)	MEAN	1.00	1500.00	4500.00	6000.00	33.33	25.00
	Large (GE 50)	MEAN	10.00	6650.00	252450.00	22936956.30	2.63	0.03
Jakarta	All	MEAN	4.00	10500.00	480750.00	46029868.25	2.18	0.02
	Large (GE 50)	MEAN	4.00	10500.00	480750.00	46029868.25	2.18	0.02
Botabek	All	MEAN	4.00	4000.00	110000.00	7360664.50	3.64	0.05
	Small (LT 50)	MEAN	1.00	1500.00	4500.00	6000.00	33.33	25.00
	Large (GE 50)	MEAN	3.00	4833.33	145166.67	9812219.33	3.33	0.05
Semarang	All	MEAN	3.00	3333.33	55333.33	5271144.00	6.02	0.06
	Large (GE 50)	MEAN	3.00	3333.33	55333.33	5271144.00	6.02	0.06

Table F8. Capital Cost of Total Private Infrastructures, Indonesia - Average Current Market Value in 1000 Rupiah -

Capital Cost - Total Private Infrastructure			Number of Firms	(A) Total Private Infrastructures	(B) Total Capital Stock	(C) A/B (percent)
Three Regions	All	MEAN	273.00	432814.96	2750719.92	15.73
	Small (LT 50)	MEAN	88.00	50255.50	403045.23	12.47
	Large (GE 50)	MEAN	185.00	614789.18	3867451.66	15.90
Jakarta	All	MEAN	128.00	202637.83	2274573.97	8.91
	Small (LT 50)	MEAN	46.00	37909.52	406813.70	9.32
	Large (GE 50)	MEAN	82.00	295046.39	3322341.93	8.88
Botabek	All	MEAN	104.00	781407.50	3792350.17	20.60
	Small (LT 50)	MEAN	31.00	49586.16	251464.55	19.72
	Large (GE 50)	MEAN	73.00	1092180.95	5296013.93	20.62
Semarang	All	MEAN	41.00	267181.98	1595040.27	16.75
	Small (LT 50)	MEAN	11.00	103770.45	814468.09	12.74
	Large (GE 50)	MEAN	30.00	327099.53	1881250.07	17.39

Table F9. Average Cost of Own Water Supply by Size of Own Water Production, Indonesia

(Rupiah per Cubic Meter)

Own Water Production (1000 cubic meter)			Fixed Cost a/	Variable Cost b/	Total Cost:
Three Regions	ALL	MEAN	355.6260	1365.4093	1721.0353
		N	174.0000	174.0000	174.0000
	1 - 9	MEAN	575.4023	2386.4519	2961.8542
		N	93.0000	93.0000	93.0000
	10 - 49	MEAN	151.0870	301.2550	452.3421
		N	47.0000	47.0000	47.0000
	50 - 99	MEAN	41.8758	62.7036	104.5794
		N	14.0000	14.0000	14.0000
	100-499	MEAN	61.4521	49.7899	111.2419
		N	11.0000	11.0000	11.0000
	500-999	MEAN	0.5360	15.3041	15.8401
		N	3.0000	3.0000	3.0000
	1000- over	MEAN	0.2632	1.7925	2.0557
		N	6.0000	6.0000	6.0000

a/ Annualized capital value of artesian wells and accessories.

b/ Include fuel, maintenance, parts, and labor.

Table F10. Average Cost of Own Electric Power Generation by Size of Own Electricity Production, Indonesia

(Rupiah per kWh)

Own Electric Production (1000 kWh)			Fixed Cost a/	Variable Cost b/	Total Cost
Three Regions	ALL	MEAN	2762.1699	1520.4044	4282.5743
		N	182.0000	182.0000	182.0000
	0 - 4	MEAN	4611.2337	3479.8750	8091.1087
		N	48.0000	48.0000	48.0000
	5 - 9	MEAN	4598.5235	1740.8491	6339.3726
		N	26.0000	26.0000	26.0000
	10 - 19	MEAN	3557.6748	1003.0541	4560.7290
		N	21.0000	21.0000	21.0000
	20 - 49	MEAN	877.2460	587.2232	1464.4692
		N	26.0000	26.0000	26.0000
	50 - 99	MEAN	3580.9955	796.8549	4377.8503
		N	15.0000	15.0000	15.0000
	100-199	MEAN	411.7136	587.1154	998.8290
		N	19.0000	19.0000	19.0000
	200-499	MEAN	372.4509	715.7094	1088.1604
		N	4.0000	4.0000	4.0000
	500-999	MEAN	47.5466	91.1408	138.6874
		N	10.0000	10.0000	10.0000
	1000-1999	MEAN	16.8088	97.7290	114.5379
		N	3.0000	3.0000	3.0000
	2000-over	MEAN	74.1331	91.0145	165.1477
		N	10.0000	10.0000	10.0000

a/ Annualized capital value of generators and accessories.

b/ Include fuel, maintenance, parts, and labor.

Table G1. Capital Cost of Private Power Generation, Thailand - Average Current Market Value in 1000 Baht -

Capital Cost - Private Power Generation			Number of Firms	(A) Generators	(B) Other Facilities	(C) Machinery & Equipment	(D) (A+B)/C (percent)
Three Regions	All	MEAN	17.00	1055.29	5568.82	129417.35	5.12
	Small (LT 50)	MEAN	2.00	150.00	650.00	1100.00	72.73
	Large (GE 50)	MEAN	15.00	1176.00	6224.67	146526.33	5.05
Bangkok	All	MEAN	5.00	774.00	720.00	81000.00	1.84
	Large (GE 50)	MEAN	5.00	774.00	720.00	81000.00	1.84
Metropo-litan	All	MEAN	8.00	515.00	8650.00	208010.00	4.41
	Small (LT 50)	MEAN	1.00	50.00	800.00	1200.00	70.83
	Large (GE 50)	MEAN	7.00	581.43	9771.43	237554.29	4.36
North	All	MEAN	4.00	2487.50	5467.50	32753.75	24.29
	Small (LT 50)	MEAN	1.00	250.00	500.00	1000.00	75.00
	Large (GE 50)	MEAN	3.00	3233.33	7123.33	43338.33	23.90

Table G2. Capital Cost of Private Water Supply, Thailand - Average Current Market Value in 1000 Baht -

Capital Cost - Private Water Supply			Number of Firms	(A) Boreholes	(B) Other Facilities	(C) Machinery & Equipment	(D) (A+B)/C (percent)
Three Regions	All	MEAN	73.00	486.92	620.47	68655.29	1.61
	Small (LT 50)	MEAN	17.00	19.82	33.53	1472.35	3.62
	Large (GE 50)	MEAN	56.00	628.71	798.64	89050.11	1.60
Bangkok	All	MEAN	8.00	857.50	1004.37	131093.13	1.42
	Large (GE 50)	MEAN	8.00	857.50	1004.37	131093.13	1.42
Metropolitan	All	MEAN	26.00	1044.19	1354.92	135205.92	1.77
	Small (LT 50)	MEAN	1.00	53.00	170.00	1200.00	18.58
	Large (GE 50)	MEAN	25.00	1083.84	1402.32	140566.16	1.77
North	All	MEAN	39.00	39.38	52.08	11480.44	0.80
	Small (LT 50)	MEAN	16.00	17.75	25.00	1489.38	2.87
	Large (GE 50)	MEAN	23.00	54.43	70.91	18430.74	0.68

Table G3. Capital Cost of Private Transportation for Shipment, Thailand - Average Current Market Value in 1000 Baht -

Capital Cost - Private Transportation for Shipment			Number of Firms	(A) Vehicles for Shipment	(B) All Vehicles	(C) Machinery & Equipment	(D) A/B (percent)	(E) A/C (percent)
Three Regions	All	MEAN	242.00	2038.16	2593.98	35908.24	78.57	5.68
	Small (LT 50)	MEAN	87.00	822.30	822.30	2869.84	100.00	28.65
	Large (GE 50)	MEAN	155.00	2720.61	3588.40	54452.37	75.82	5.00
Bangkok	All	MEAN	116.00	1595.63	2259.42	20393.24	70.62	7.82
	Small (LT 50)	MEAN	49.00	622.24	622.24	2191.76	100.00	28.39
	Large (GE 50)	MEAN	67.00	2307.51	3456.76	33704.78	66.75	6.85
Metropo-litan	All	MEAN	93.00	2483.14	3070.29	66628.46	80.88	3.73
	Small (LT 50)	MEAN	20.00	579.00	579.00	5680.00	100.00	10.19
	Large (GE 50)	MEAN	73.00	3004.82	3752.84	83326.67	80.07	3.61
North	All	MEAN	33.00	2339.70	2427.64	3870.61	96.38	60.45
	Small (LT 50)	MEAN	18.00	1637.22	1637.22	1593.33	100.00	102.75
	Large (GE 50)	MEAN	15.00	3182.67	3376.13	6603.33	94.27	48.20

Table G4. Capital Cost of Private Transportation for Workers, Thailand - Average Current Market Value in 1000 Baht -

Capital Cost - Private Transportation for Workers			Number of Firms	(A) Vehicles for Workers	(B) All Vehicles	(C) Machinery & Equipment	(D) A/B (percent)	(E) A/C (percent)
Three Regions	All	MEAN	28.00	5274.46	9130.71	99656.61	57.77	5.29
	Small (LT 50)	MEAN	1.00	200.00	200.00	200.00	100.00	100.00
	Large (GE 50)	MEAN	27.00	5462.41	9461.48	103340.19	57.73	5.29
Bangkok	All	MEAN	10.00	8313.00	11760.50	70220.00	70.69	11.84
	Small (LT 50)	MEAN	1.00	200.00	200.00	200.00	100.00	100.00
	Large (GE 50)	MEAN	9.00	9214.44	13045.00	78000.00	70.64	11.81
Metropo-litan	All	MEAN	13.00	4431.15	9277.31	143035.15	47.76	3.10
	Large (GE 50)	MEAN	13.00	4431.15	9277.31	143035.15	47.76	3.10
North	All	MEAN	5.00	1390.00	3490.00	45745.60	39.83	3.04
	Large (GE 50)	MEAN	5.00	1390.00	3490.00	45745.60	39.83	3.04

Table G5. Capital Cost of Motorcycles for Messengers, Thailand - Average Current Market Value in 1000 Baht -

Capital Cost - Motorcycle for Communication			Number of Firms	(A) Motorcycles for Messengers	(B) All Vehicles	(C) Machinery & Equipment	(D) A/B (percent)	(E) A/C (percent)
Three Regions	All	MEAN	63.00	95.65	4157.62	64069.59	2.30	0.15
	Small (LT 50)	MEAN	10.00	53.10	2325.00	1800.00	2.28	2.95
	Large (GE 50)	MEAN	53.00	103.68	4503.40	75818.57	2.30	0.14
Bangkok	All	MEAN	33.00	146.85	3213.94	48374.24	4.57	0.30
	Small (LT 50)	MEAN	7.00	61.43	1064.29	2000.00	5.77	3.07
	Large (GE 50)	MEAN	26.00	169.85	3792.69	60859.62	4.48	0.28
Metropo-litan	All	MEAN	17.00	39.35	5928.24	139763.76	0.66	0.03
	Large (GE 50)	MEAN	17.00	39.35	5928.24	139763.76	0.66	0.03
North	All	MEAN	13.00	39.31	4237.69	4926.92	0.93	0.80
	Small (LT 50)	MEAN	3.00	33.67	5266.67	1333.33	0.64	2.52
	Large (GE 50)	MEAN	10.00	41.00	3929.00	6005.00	1.04	0.68

Table G6. Capital Cost of Private Communication (Radio-Equipment), Thailand - Average Current Market Value in 1000 Baht -

Capital Cost - Private Communication (Radio equipment)			Number of Firms	(A) Radio-Equipment	(B) Machinery & Equipment	(C) A/B (percent)
Three Regions	All	MEAN	13.00	35.23	253292.23	0.01
	Small (LT 50)	MEAN	2.00	5.50	400.00	1.37
	Large (GE 50)	MEAN	11.00	40.64	299272.64	0.01
Bangkok	All	MEAN	2.00	47.50	41622.50	0.11
	Large (GE 50)	MEAN	2.00	47.50	41622.50	0.11
Metropo-litan	All	MEAN	5.00	51.00	636570.80	0.01
	Large (GE 50)	MEAN	5.00	51.00	636570.80	0.01
North	All	MEAN	6.00	18.00	4450.00	0.40
	Small (LT 50)	MEAN	2.00	5.50	400.00	1.37
	Large (GE 50)	MEAN	4.00	24.25	6475.00	0.37

Table G7. Capital Cost of Private Transportation for Garbage Disposal, Thailand - Average Current Market Value in 1000 Baht -

Capital Cost - Private Transportation for Garbage Disposal			Number of Firms	(A) Vehicles for Garbage	(B) All Vehicles	(C) Machinery & Equipment	(D) A/B (percent)	(E) A/C (percent)
Three Regions	All	MEAN	3.00	217.33	1334.00	25333.33	16.29	0.86
	Large (GE 50)	MEAN	3.00	217.33	1334.00	25333.33	16.29	0.86
North	All	MEAN	3.00	217.33	1334.00	25333.33	16.29	0.86
	Large (GE 50)	MEAN	3.00	217.33	1334.00	25333.33	16.29	0.86

Table G8. Capital Cost of Total Private Infrastructures, Thailand - Average Current Market Value in 1000 Baht -

Capital Cost - Total Private Infrastructure			Number of Firms	(A) Total Private Infrastructures	(B) Total Capital Stock	(C) A/B (percent)
Three Regions	All	MEAN	279.00	3032.15	38913.76	7.79
	Small (LT 50)	MEAN	92.00	815.10	3530.95	23.08
	Large (GE 50)	MEAN	187.00	4122.89	56321.35	7.32
Bangkok	All	MEAN	129.00	2294.57	25662.40	8.94
	Small (LT 50)	MEAN	50.00	622.40	2774.32	22.43
	Large (GE 50)	MEAN	79.00	3352.90	40148.53	8.35
Metropolitan	All	MEAN	102.00	4204.74	68561.85	6.13
	Small (LT 50)	MEAN	20.00	632.65	6259.00	10.11
	Large (GE 50)	MEAN	82.00	5075.98	83757.67	6.06
North	All	MEAN	48.00	2522.67	11524.58	21.89
	Small (LT 50)	MEAN	22.00	1418.91	2770.50	51.21
	Large (GE 50)	MEAN	26.00	3456.62	18931.88	18.26

Table G9. Average Cost of Own Water Supply by Size of Own Water Production, Thailand

(Baht per Cubic Meter)

Own Water Production (1000 cubic meter)			Fixed Cost a/	Variable Cost b/	Total Cost
Three Regions	ALL	MEAN	5.5058	54.4252	59.9310
		N	68.0000	68.0000	68.0000
	1 - 9	MEAN	9.9603	97.4945	107.4548
		N	26.0000	26.0000	26.0000
	10 - 49	MEAN	4.1977	63.1610	67.3587
		N	16.0000	16.0000	16.0000
	50 - 99	MEAN	5.1775	10.3309	15.5084
		N	5.0000	5.0000	5.0000
	100-499	MEAN	2.3739	10.1799	12.5538
		N	8.0000	8.0000	8.0000
	500-999	MEAN	0.6871	3.7675	4.4546
		N	4.0000	4.0000	4.0000
	1000-over	MEAN	0.0706	0.8130	0.8835
		N	9.0000	9.0000	9.0000

a/ Annualized capital value of artesian wells and accessories.

b/ Include fuel, maintenance, parts, and labor.

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